



Indonesian Society of Hypertension
Perhimpunan Dokter Hipertensi Indonesia



16th

INASH VIRTUAL SCIENTIFIC MEETING

FEBRUARY 19-20, 2022

**ABSTRACT
BOOK**



Maruhum Bonar Marbun, MD, Ph.D
Organizing Committee
Chairperson
16th InaSH Scientific
Meeting 2022



Erwinanto, MD
President
Indonesian Society of
Hypertension



Antonia Anna Lukito, MD, PhD
Scientific Committee
Chairperson
16th InaSH Scientific Meeting
2022

Welcome Message

It takes an immense pleasure to announce **Annual Meeting of Indonesian Society of Hypertension Goes Virtual on February 19-20, 2022.**

The 16th InaSH Virtual Meeting 2022 aims at gathering the professionals, academia, and industry experts in hypertension and creates a unique platform to showcase and discuss the challenges and the latest technologies in the treatment and diagnosis of hypertension. It also enlightens the hypertension-related organ damages and other metabolic aspects.

This includes plenary sessions, interactive keynote lectures, international societies joint-sessions, poster session, young investigator session, panel discussions and workshops with respect to recent innovations and achievements in specific field of the subject.

As a hallmark of InaSH annual meeting tradition, we will launch **the 2022 Consensus booklet** at the end of this virtual meeting. Moreover, to make this virtual meeting more lively and interactive, we arrange a special flash quiz and mini quiz at the end of each session.

And last but not least, the **16th InaSH virtual Meeting 2022** will have daily wrap-up session delivering the essence of all-day lectures.

Dear colleagues, in this pandemic situation, we can't come together, but our ideas can!

Program at glance

**Symposium &
Master Class of
Hypertension**
Saturday - Sunday
February 19 - 20, 2022

THE 16TH InaSH VIRTUAL SCIENTIFIC MEETING
**The Most Updated Multidisciplinary Approaches
 in Hypertension Management**

Scientific Session [Saturday, February 19, 2022]

TIME	CHANNEL A	CHANNEL B	CHANNEL C
07.50 - 08.40	PLENARY SESSION 1		
08.40 - 09.00		OPENING CEREMONY	
09.00 - 10.00	SYMPOSIUM 1 A Optimizing CV Outcome in CV Risk Continuum: From Prevention to Treatment	SYMPOSIUM 1 B The Impact of Sympathetic Nervous System on Hypertension Management	SYMPOSIUM 1 C The Role of Renal Denervation in Intractable Hypertension
10.00 - 10.15	MINI QUIZ	MINI QUIZ	MINI QUIZ
10.15 - 11.15	SYMPOSIUM 2 A Age, Gender, and Hypertension	SYMPOSIUM 2 B RAAS Blocker Based Treatment: From Essential to Multiple Risk of Hypertension Patients	SYMPOSIUM 2 C IMPROVING RENAL OUTCOME IN DIABETIC KIDNEY
11.15 - 11.30	MINI QUIZ	MINI QUIZ	MINI QUIZ
11.30 - 12.30	SYMPOSIUM 3 A From Hypertension to Heart Failure	SYMPOSIUM 3 B UPDATE ON ARTERIAL STIFFNESS IN CVD	SYMPOSIUM 3 C Hypertension with Metabolic Syndrome: Revisited
12.30 - 12.45	MINI QUIZ	MINI QUIZ	MINI QUIZ
12.45 - 14.00	SYMPOSIUM 4 A Interesting Situations in Hypertension	SYMPOSIUM 4 B LONG COVID-19 ILLNESS: INTERACTIVE CASES Post COVID-19 Multisystem Sequelae: Are Substantial Related to CVD?	SYMPOSIUM 4 C How to Session: "Hypertension in Elderly for Primary Physician"
14.00 - 14.15	WRAP UP		

Master Class of Hypertension [Saturday, February 19, 2022]

SATURDAY, FEBRUARY 19, 2022		
MASTER CLASS OF HYPERTENSION 1	MASTER CLASS OF HYPERTENSION 2	MASTER CLASS OF HYPERTENSION 3
Hypertension in primary care	Hypertension in special condition	Managing emergency condition in hypertensive patients

Scientific Program

**Symposium &
Master Class of
Hypertension**
Saturday - Sunday
February 19 - 20, 2022

SCIENTIFIC PROGRAM

Saturday, February 19, 2022

PLENARY SESSION 1

CHANNEL B

Chair: *Teguh Ranakusuma*

07.50 - 08.00 Ethics of Hypertension Management and Patient Safety in Social Media

Pukovisa Prawirohardjo

08.00 - 08.20 Hypertension is a Perennial Challenge

Rully M.A. Roesli

08.20 - 08.40 New Advances in Hypertension Treatment in Post Covid Syndrome Era

Hae-Young Lee (KSH)

08.40 - 09.00 **OPENING CEREMONY**

SYMPOSIUM 1 A

CHANNEL A

OPTIMIZING CV OUTCOME IN CV RISK CONTINUUM: FROM PREVENTION TO TREATMENT

Chair: *Diatri Nari Lastri*

09.00 - 09.15 The Role of SGLT2i in Diabetic Kidney Disease

I Gde Raka Widiana

09.15 - 09.30 Defining the Role of Prolonged Release Metoprolol in CV Disease Continuum

Eko Antono

09.30 - 09.45 Maximizing HFrEF Treatment Outcome by Addition of SGLT2i: Leveraging Dapa HF Result

Vebiona Kartini Prima Putri

09.45 - 10.00 Discussion

SYMPOSIUM 1 B

CHANNEL B

THE IMPACT OF SYMPATHETIC NERVOUS SYSTEM ON HYPERTENSION MANAGEMENT

- Chair: Wiguno Prodjosudjadi*
- 09.00 - 09.15 Gender and Sympathetic Activities in Hypertension
Manfaluthy Hakim
- 09.15 - 09.30 Beta-Blockers: When You Need Them for Hypertension?
Rossana Barack
- 09.30 - 09.45 Beta-Blockers and Renoprotection: The Potential of Carvedilol
Ni Made Hustrini
- 09.45 - 10.00 Discussion

SYMPOSIUM 1 C

CHANNEL C

THE ROLE OF RENAL DENERVATION IN INTRACTABLE HYPERTENSION

- Chair: Iwan Dakota*
- 09.00 - 09.15 New Insight of Intractable Hypertension
Ismail Setyopranoto
- 09.15 - 09.30 Device Aided Treatment in Hypertension Management
Novadian
- 09.30 - 09.45 Renal Denervation: Cases Study
Yoga Yuniadi
- 09.45 - 10.00 Discussion
- 10.00 - 10.15 **MINI QUIZ**

SYMPOSIUM 2 A

CHANNEL A

AGE, GENDER, AND HYPERTENSION

- Chair: Suhardjono*
- 10.15 - 10.30 Arterial Stiffness and The Risk of Cerebral White Matter Hyperintensity
Cep Juli
- 10.30 - 10.45 Overcoming Challenges in Hypertension Management : The Role of Vasodilator Beta Blocker
Pranawa Martosuwignyo
- 10.45 - 11.00 Hypertension in Age and Gender : What Can We Learn from The Recent Real-World Asian Data?
Anwar Santoso
- 11.00 - 11.15 Discussion

SYMPOSIUM 2 B

CHANNEL B

RAAS BLOCKER BASED TREATMENT: FROM ESSENTIAL TO MULTIPLE RISK OF HYPERTENSION PATIENTS

- Chair: Freddy Sitorus*
10.15 - 10.30 Which Antihypertensive Drugs Have the most Neuroprotective Effect?
Amanda Tiksnadi
10.30 - 10.45 How to Manage Hypertensive Patients with Multiple Risk Factors?
Djoko Wibisono
10.45 - 11.00 Rational Use of Single Pill Combination of Beta-Blocker and ACE Inhibitor: Why, When and Whom?
Badai Bathara Tiksnadi
11.00 - 11.15 Discussion

SYMPOSIUM 2 C

CHANNEL C

IMPROVING RENAL OUTCOME IN DIABETIC KIDNEY

- Chair: Mursyid Bustami*
10.15 - 10.30 The Vice Versa of Cardio Renal Protection
A Sari Mumpuni
10.30 - 10.45 Glycemic Control Strategy for Better Renal Outcomes
Tri Juli Tarigan
10.45 - 11.00 Diabetic Kidney Disease: The Role of Angiotensin Receptor Blockers
Ginova Nainggolan
11.00 - 11.15 Discussion
11.15 - 11.30 **MINI QUIZ**

SYMPOSIUM 3 A

CHANNEL A

FROM HYPERTENSION TO HEART FAILURE

- Chair: Ekawati Dani*
11.30 - 11.45 Cerebral Blood Flow and Neurological Changes in Chronic Heart Failure
Rahmat Hidayat
11.45 - 12.00 How Important Is It to Reach Blood Pressure Target in Preventing Kidney Damage?
Afiatin
12.00 - 12.15 Prolonged Hypertension: Will it end to Heart Failure?
I Made Putra Swi Antara
12.15 - 12.30 Discussion

SYMPOSIUM 3 B

CHANNEL B

UPDATE ON ARTERIAL STIFFNESS IN CVD

- Chair: Rochmat Romdoni*
11.30 - 11.45 The Association of Arterial Stiffness and Cognitive Decline
Hasan Sjahrir
11.45 - 12.00 Sympathetic overdrive & Cardiovascular Risk: Clinical and therapeutic relevance
Haerani Rasyid
12.00 - 12.15 Arterial stiffness in Youth: how to avoid it?
BRM Ario Soeryo
12.15 - 12.30 Discussion

SYMPOSIUM 3 C

CHANNEL C

HYPERTENSION WITH METABOLIC SYNDROME: REVISITED

- Chair: Heru Prasanto*
11.30 - 11.45 Obesity, Sleep Apneu and Cerebral Cardiovascular Disease
Wardah Rahmatul Islamiyah
11.45 - 12.00 The Drug Technology in Reducing Triglyceride to Lower Residual CV Risk
Em Yunir
12.00 - 12.15 Could We Reduce CV Events by Improving Medication Adherence in Hypertensive Patients?
Saifur Rohman
12.15 - 12.30 Discussion

12.30 - 12.45 **MINI QUIZ**

SYMPOSIUM 4 A

CHANNEL A

INTERESTING SITUATIONS IN HYPERTENSION

- Chair:* *Frits R.W. Suling*
12.45 - 13.00 How to Treat Blood Pressure Without Ruining Sexual Life
Chandra Irwanadi Mohani
- 13.00 - 13.15 RAAS Blocker as a Tentative Treatment of COVID-19
Antonia Anna Lukito
- 13.15 - 13.30 Optimizing Blood Pressure Control in Post Stroke Patients
Syahrul Gazali
- 13.30 - 13.45 The Benefit of Candesartan Across Cardiovascular
Continuum: Beyond Hypertension
Daniel Tanubudi
- 13.45 - 14.00 Discussion

SYMPOSIUM 4 B

CHANNEL B

LONG COVID-19 ILLNESS: INTERACTIVE CASES

Post COVID-19 Multisystem Sequelae: Are Substantial Related to CVD?

- Chair:* *Ceva Witjaksono*
Case Presenter: *Dimas Septiar*
Panelists: *Dafsah A Juzar*
Darma Imran
Ceva Witjaksono & Maruhum Bonar Marbun

SYMPOSIUM 4 C

CHANNEL B

How to Session: "Hypertension in Eldery for Primary Physician"

- Chair:* *Adre Mayza*
12.45 - 13.00 Should the Hypertensive Elderly be Treated Differently?
Adrianus Kosasih
- 13.00 - 13.15 Impact of BP Lowering on Renal Function in the Elderly
Ria Bandiara
- 13.15 - 13.30 BP Lowering and Memory Function in Elderly
Fasihah Fitri
- 13.30 - 14.00 Discussion
- 14.00 - 14.15 **WRAP UP**

MASTER CLASS OF HYPERTENSION

Saturday, February 19, 2022

**MASTER CLASS OF HYPERTENSION 1
HYPERTENSION IN PRIMARY CARE****CHANNEL A**

TIME	TOPIC
14.30 - 14.40	Opening
14.40 - 15.00	Understanding pathophysiology of hypertension and the correct BP target in hypertension therapy <i>Zulkhair Ali</i>
15.00 - 15.20	Beyond Blood Pressure Level, Stratification in Hypertensive Patients is Important in Leading to The Choice of Drugs <i>Arieska Ann Soenarta</i>
15.20 - 15.40	Non pharmacological strategi in hypertensive managment : prescribing the right diet and exercise <i>Ekawati Dani</i>
15.40 - 16.00	case discussion <i>Aryatama</i>
16.00 - 16.20	Q and A

**MASTER CLASS OF HYPERTENSION 2
HYPERTENSION IN SPECIAL CONDITION****CHANNEL B**

TIME	TOPIC
14.30 - 14.40	Opening
14.40 - 15.00	Hypertension in Women, How to Know, Prevent and Manage It <i>Celly Anantaria</i>
15.00 - 15.20	Hypertensive Encephalopathy <i>Abdul Wahid</i>
15.20 - 15.40	Hypetension in Chronic Kidney Disease <i>Nunuk Mardiana</i>
15.40 - 16.00	case discussion <i>Maria Riastuti</i>
16.00 - 16.20	Q and A

MASTER CLASS OF HYPERTENSION 3**CHANNEL C****MANAGING EMERGENCY CONDITION IN HYPERTENSIVE PATIENTS**

TIME	TOPIC
14.30 - 14.40	Opening
14.40 - 15.00	Management of high blood pressure in acute ischemic stroke and acute intracerebral hemorrhage <i>Rahmat Hidayat</i>
15.00 - 15.20	Management of high blood pressure with cardiovascular emergencies <i>Paskariatne Probo Dewi</i>
15.20 - 15.40	Hypertensive emergency in acute renal failure and dialysis patients <i>Yenny Kandarini</i>
15.40 - 16.00	case discussion <i>Dian Yaniarti</i>
16.00 - 16.20	Q and A

SCIENTIFIC PROGRAM

Sunday, February 20, 2022

PLENARY SESSION 2

CHANNEL B

Chair: Jose Roesma

08.00 - 08.20 Diastolic Blood Pressure: Should We Care?
Erwinanto

08.20 - 08.40 How to Detect and Manage Non-Adherence to
Antihypertensive Treatment
Maciej Tomaszewski (ISH)

08.40 - 09.00 InaSH AWARD CEREMONY

SYMPOSIUM 5 A

CHANNEL A

Joint Session with HOPE of Asia

Chair: Yuda Turana, Syafrizal Nasution, Amanda Tiksnadi

09.00 - 09.15 The Interim Report of MMM 2021 in Indonesia
Bambang Widyantoro

09.15 - 09.30 Seven action approaches for management of hypertension in
Asia (recommended by HOPE Asia Network)
Kario Kazuomi

09.30 - 09.45 Highlights of 2022 Taiwan Hypertension Guidelines: Home BP
monitoring, STEP, and Beyond
Tsung-Dau Wang

09.45 - 10.00 Discussion

SYMPOSIUM 5 B

CHANNEL B

CARDIOVASCULAR DISEASE WITH SPECIFIC CONSIDERATIONS

Chair: Tunggul D. Situmorang

09.00 - 09.15 Drug Induced Hypertension: What We Should Know?
Sutomo Kasiman

09.15 - 09.30 Treating Hypertension in Patients with High Cardiovascular
Risk
Estu Rudiktyo

09.30 - 09.45 Implementation of Pharmagenomics in Cardiology
Idar Mappangara

09.45 - 10.00 Discussion

SYMPOSIUM 5 C

CHANNEL C

**WHEN THE HEART IS NOT ALONE - MYTH OR ALLY IN CARDIOVASCULAR
COMORBIDITIES**

- Chair:* *Rahmat Hidayat*
- 09.00 - 09.15 Molecular Mechanisms of SGLT2i on Cardio Renal Protection
Bambang Purwanto
- 09.15 - 09.30 Expectation from Empaglifozin in Managing T2D with CVD
Patients
Ketut Suastika
- 90.30 - 09.45 SGLT2i in Cardiology Guidelines - How Did It Evolve
Bambang Budi Siswanto
- 09.45 - 10.00 Discussion
- 10.00 - 10.15 **MINI QUIZ**

SYMPOSIUM 6 A

CHANNEL A

CLINICAL IMPACTS OF OUT-OF-OFFICE BLOOD PRESSURE

- Chair:* *Nani Hersunarti & Aryatama*
- 10.15 - 10.30 Sleep, Blood Pressure Variability, and Cardiovascular
Outcomes
Artaria Tjempakasari
- 10.30 - 10.45 Hypertension and Heart Failure: How to Improve Cardiac
Performance?
Siti Elkana Nauli
- 10.45 - 11.00 Home BP Monitoring: What Do The Guidelines Say?
Yuda Turana
- 11.00 - 11.15 Discussion

SYMPOSIUM 6 B

CHANNEL B

OPTIMIZING CVD MANAGEMENT

- Chair:* *Djoko Wibisono*
- 10.15 - 10.30 Medical and Interventional Approaches in ACS Patients
Isman Firdaus
- 10.30 - 10.45 Total Vascular & early time to CV benefit with High Intensity
Statin
Salim Haris
- 10.45 - 11.00 Ensuring Optimal Management of Hypertension in the New
Normal Era
Aida Lydia
- 11.00 - 11.15 Discussion

SYMPOSIUM 6 C

CHANNEL C

CCB IN HYPERTENSION MANAGEMENT

- Chair: Parlindungan Siregar*
10.15 - 10.30 The Rational of Triple Combination in Hypertensive Treatment
Made Junior Rina Artha
10.30 - 10.45 Hypertension Management Based on Recent Guidelines
Eka Harmeiwaty
10.45 - 11.00 Hypertension Management with CCB: Not All CCB Are Equal
Tunggul D Situmorang
11.00 - 11.15 Discussion

11.15 - 11.30 MINI QUIZ

09.00 - 11.30 **YOUNG INVESTIGATOR AWARD**

CHANNEL D

10.00 - 15.00 **VIRTUAL TIGGER QUIZ**

CHANNEL E

SYMPOSIUM 7 A

CHANNEL A

DELAYING ATHEROGENESIS STRATEGIES

- Chair: Ekawati Dani*
11.30 - 11.45 Prevention and Management of Cerebral Small Vessel Disease
M. Kurniawan
11.45 - 12.00 Treating Hypertension and Lowering Risk of Atherogenesis
Arieska Ann Soenarta
12.00 - 12.15 Tips and Trick on Dyslipidemia Management: How to Choose
Better Treatment Based on Guidelines and Practical Approach
Erwan Martanto
12.15 - 12.30 Discussion

SYMPOSIUM 7 B

CHANNEL B

**THE ROLE OF ELECTROLYTES IN HYPERTENSION, KIDNEY AND HEART
FAILURE**

- Chair: Yan Herry*
11.30 - 11.45 Effect of Body Fluid and Electrolytes in Hypertension
Eka Musridharta
11.45 - 12.00 Preventing Worsening Renal Function in Cardiorenal
Syndrome
Pringgodigdo Nugroho
12.00 - 12.15 The Benefit of Aquaretic in Heart Failure Patient - for
Outpatient Setting
Paskariatne Probo Dewi
12.15 - 12.30 Discussion

SYMPOSIUM 7 C**CHANNEL C****Joint Session with Asia Pacific Society**

- Chair:* Erwinanto
- 11.30 - 11.45 Preventive Effect of Antihypertensive Agents: Stratified of Age and Blood Pressure
Maruhum Bonar Marbun
- 11.45 - 12.00 lifetime Cardiovascular Disease Risk of Young Aged Hypertension
Hyeon-Chang Kim (KSH)
- 12.00 - 12.15 Current topics of blood pressure monitoring – self-measurement at home and automated office measurement
Kei Asayama (JSH)
- 12.15 - 12.30 Discussion
- 12.30 - 12.45 **MINI QUIZ**

NURSE SESSION 1**CHANNEL D****COMPREHENSIVE NURSING CARE FOR HYPERTENSIVE PATIENTS WITH CO-MORBIDITIES**

- Chair:* Iyan Solihin
- 11.30 – 11.40 The role of nurses in managing high blood pressure
Terry Lukky
- 11.40 – 11.50 Nursing care in patients with hypertensive and arrhythmias
Iyan Solihin
- 11.50 – 12.00 Nursing care in patients with hypertensive and stroke
Yurnawati
- 12.00 – 12.10 nursing assessment management of dialysis patients with hypertension
Tatu Meri Hasna
- 12.10 – 12.30 Discussion

SYMPOSIUM 8**CHANNEL B****Joint Session with ISH**

- Chair:* Arieska Ann Soenarta, Jose Roesma
- 12.45 - 13.00 Hypertension Accross A Woman's Life Cycle
Siska Suridanda Dany
- 13.00 - 13.15 Knowledge Gaps Related to Hypertension in Women
Ulrike Muscha Steckelings (ISH)
- 13.15 - 13.30 Lifestyle modification in hypertension -What's New?
Fadi Charchar (ISH)
- 13.30- 13.45 Discussion

SYMPOSIUM 9

CHANNEL C

**COMPLEX INTERPLAY BETWEEN OXIDATIVE STRESS AND
CARDIOMETABOLIC DISEASE**

Chair: Antonia Anna Lukito

12.45 - 13.00 Oxidative stress AND neurodegenerative diseases

Yuda Turana

13.00 - 13.15 The Role of Natural Astaxanthin as Supportive Therapy in
Atherosclerosis

I Wayan Wita

13.15 - 13.30 Antioxidant effect of Astaxanthin in Oxidative Stress Situation
due to Hyperglycemia in Diabetes Mellitus

Tjokorda Gde Dalem Pemayun

13.30- 13.45 Discussion

13.45 - 14.00 **MINI QUIZ**

NURSE SESSION 2

CHANNEL D

**COMPREHENSIVE NURSING CARE FOR HYPERTENSIVE PATIENTS WITH
CO-MORBIDITIES**

Chair: Ii Ismail

12.45 - 12.55 Nursing care in elderly patients with hypertension

Hana Mutiasari

12.55 - 13.05 Home blood pressure monitoring education by the nurses

Ade Eneh Suhaeni

13.05 - 13.15 Nursing care in patients with hypertension and CKD

Rita Kartika

13.15 - 12.45 Discussion

SYMPOSIUM 10

CHANNEL B

MEET THE EXPERTS FROM THE 3 DISCIPLINES

Chair: Frits R.W. Suling

Presenter: Aryatama

Panelists: Anwar Santoso

Teguh Ranakusuma

Lestariningsih

15.20 - 15.40 **WRAP UP**

15.40 - 15.55 **LAUNCHING CONSENSUS INASH 2022**

16.00 - 16.20 **CLOSING CEREMONY**

16.20 - 16.30 **WINNER ANNOUNCEMENTS & GRAND DOORPRIZE**

**CURRENT MANAGEMENT OF BLOOD PRESSURE VARIABILITY IN
PREVENTING TARGET ORGAN DAMAGE**

TIME	TOPIC
13.00 - 13.10	Opening
13.10 - 13.35	Optimizing Blood pressure measurement in diagnosis and management of hypertension <i>Rarsari Soerarso</i>
13.35 - 14.00	Nocturnal hypertension : what we have to know and what we can do <i>Eka Harmeiwaty</i>
14.00 - 14.25	How to achieve BP target in patient with CKD <i>Ni Nyoman Paramita Ayu</i>
14.25 - 14.50	Interactive Case Discussion <i>Rarsari Soerarso</i>
14.50 - 15.20	Q and A

Abstract Speakers

**Plenary Session
Symposium**

PLENARY SESSION 1

New Advances in Hypertension Treatment in Post COVID-19 Era

Hae-Young Lee

Seoul National University College of Medicine.

COVID-19 pandemic from 2020 has continued until now. From the early phase of COVID-19, there was concerns regarding high mortality rates in those with underlying disease. The most common comorbidities among COVID-19 patients include hypertension, diabetes mellitus and coronary artery disease, which are frequently treated with ARBs, ACEIs, and statins. Given that SARS-CoV-2 enters the target cell via ACE2 cell surface receptors, the use of ARBs and ACEIs, which reportedly augment ACE2 levels, arouse concern in the last year. In contrast, other theories propose the use of ARBs as possible COVID-19 therapeutics. The theory is that enhanced levels of ACE2 competitively bind with SARS-CoV and might neutralize the virus. Also, several observational studies have reported the beneficial effect of ARBs, ACEIs, and statins on pneumonia-related outcomes. From the first patient to now, Korea has registered all COVID-19 patients without follow-up loss. Therefore, using national registry data, many studies has been evaluated the association between the use of statins, ARBs, and ACEIs with COVID-19 infection risk or severity.

Here I will tell the various impact of COVID-19 crisis on hypertension.

Briefly, chronic disorders such as obesity, hypertension, diabetes, and hyperlipidemia are predicted to increase due to worsening health behaviors, decreasing income and psychosocial stress during COVID-19 pandemic. Statins, ARBs or ACEIs are not associated with COVID-19-related fatal outcomes. Statins were associated with significantly lower mortality of COVID-19 by 36%, consistent with usual pneumonia patients. While ARBs or ACEIs were not associated with fatal outcomes, the possible beneficial effect of ARBs observed in pneumonia was attenuated in COVID-19. Overall, healthcare service use and anti-HT prescriptions did not decrease significantly. However, they were decreased in younger adults, or in low-middle income class. Delayed diagnosis of hypertension and reduced treatment might increase the burden of cardiovascular disease in the long-term. Having chronic diseases does not mean that you should not get vaccinated.

S 1A

Defining the Role of Prolonged Release Metoprolol in CV Disease Continuum

Eko Antono

Prolonged release Metoprolol is a second generation Beta-1 selective Beta-Blocker (BB), which in the form of Metoprolol Succinate CR, has a stable 24h plasma concentration level. The previously marketed in Indonesia Metoprolol Tartrate has a plasma half life of 3-4h.

Cardiovascular disease (CVD) continuum is chain of events started from various risk factors progressing to more advanced CVD such as angina, myocardial infarction (MI), heart failure (HF) and death. Sympathetic nervous system overactivation was found in every stage of this continuum, such that beta blockade can intervene at many points in CVD continuum.

Trials of Metoprolol in hypertension showed efficacy of Metoprolol in reducing systolic and diastolic blood pressure. The MAPHY Study of Metoprolol in hypertension reduced mortality (19%) and sudden death (23%) after 4,2 years. In the treatment of hypertension, BBs is not a first line drug in uncomplicated hypertension, however in hypertension with CVD (CAD/HF/AF), BB become one of the first line drugs.

Metaanalysis of short term trials of BBs after myocardial infarction (MI) did not show any difference in mortality. Nevertheless in the pre-reperfusion era, longterm trials of BBs in secondary prevention after MI showed significant reduction of mortality in post MI patients. Trials of short term and long term using Metoprolol showed the same results. There is still debates, and some trials is still going on, in the contemporary post reperfusion era regarding the efficacy and required duration of BB in post MI patients.

Trials of BBs in HF with reduced ejection fraction have been shown to reduce mortality and morbidity which make BBs as one of the Class I recommended drugs for HFrEF patients. Metoprolol CR in MERIT-HF trial reduced mortality by 34 %, and also cardiovascular mortality (39%), sudden cardiac death (42%) and death due to worsening HF (49%).

In summary, BBs is effective in the prevention and treatment of CVD. Prolonged release Metoprolol have an important role in the treatment of CVD throughout the CVD continuum.

Peranan SGLT-2 inhibitor terhadap Penyakit Ginjal Diabetik

I Gde Raka Widiania

Divisi Ginjal Hipertensi FK UNUD/RSUP Sanglah Denpasar

Abstrak

Salah satu peranan ginjal dlm regulasi homeostasis glukosa adalah transport glukosa dalam filtrat glomerulus dari lumen tubulus ke dalam sirkulasi (reabsorpsi). Mekanisme ini bertujuan untuk mempertahankan kadar glukosa darah dalam keadaan normal. Peranan ini dilakukan oleh molekul *sodium glucose co-transporter* (SGLT) di TCP yang sebagian besar dilakukan oleh SGLT-2 (90%) dan hanya sebagian kecil (10%) dilakukan oleh SGLT-1. Molekul transport ini bekerja mereabsorpsi glukosa transtubuler dengan menukar kalium dengan sodium menggunakan transport aktif pompa Na/K dari lumen tubulus menuju pembuluh darah peri-tubuler. Resorpsi glukosa tergantung dengan kadar glukosa plasma, dimana semakin tinggi kadar glukosa plasma, semakin tinggi pula filtrasi glukosa melalui membran glomerulus dan semakin tinggi kadar glukosa dalam filtrat glomerulus. Apabila kadar glukosa plasma melebihi 180 mg/dL, maka kemampuan reabsorpsi ini mencapai maksimal dan glukosa yang tidak diabsorpsi akan keluar melalui urin (glucosuria). Mekanisme absorpsi glukosa oleh SGL-2 di tubulus ginjal yang melibatkan sodium ini dilakukan melalui mekanisme *tubuloglomerular feedback* dan *renin angiotensin aldosteron system*. Mekanisme ini dimulai dengan aktivitas sel makula densa yang memantau komposisi filtrat lumen TCD. Bila tubuh mengalami dehidrasi (konsentrasi Na meningkat), maka sel makula densa terangsang dan melepaskan sinyal parakrin yang (ATP dan adenosin). Hal ini mengakibatkan sel jukstaglomerular di dekatnya terangsang dan mengalami vasokonstriksi pada vasa aferent, yang mengakibatkan filtrasi glomerulus menurun dan retensi cairan badan. Bersamaan dengan peristiwa ini, RAAS tertekan, angiotensin II menurun dan vasodilatasi vasa eferent dan tekanan

intraglomerular menurun. Hal sebaliknya terjadi bila terjadi kelebihan cairan tubuh (*overload*). Mekanisme ini berguna untuk menjaga osmolaritas plasma dalam kisaran normal. Dengan demikian, reabsorpsi glukosa akan mengimbangi perubahan hemodinamik ginjal. Pada prinsipnya terdapat hubungan antara hiperglikemia, albuminuria, PGK akibat penyakit ginjal kronik.

Terdapat hubungan erat antara penyakit jantung dan penyakit ginjal (*cardiovascular and renal continuum*) dalam pathogenesis diabetes melitus menyebabkan penyakit ginjal kronik (PGK) dan penyakit jantung koroner/gagal jantung. Kondisi ini dikenal dengan sindrom kardierenal. Sindrom ini terjadi secara paralel dimulai dengan faktor risiko penyakit kardiovaskular dan penyakit ginjal yang hampir sama.

Peran sentral dari SGLT-2 dalam transport glukosa dan sodium diginjal dapat dihambat dengan obat golongan *SGLT-2 inhibitors*. Bila transpoter SGLT-2 ini dihambat kerjanya, maka akibatnya hiperglikemia, hipertensi intraglomerular, proteinuria dan retensi natrium (umumnya terjadi pada diabetes melitus) akan dihambat. Hal ini akan menyebabkan penurunan hiperglikemia, glukouria dan natriuresis dan diuresis. Efek jangka Panjang obat ini menghasilkan efek metabolik, hemodinamik yang menguntungkan pada jantung dan ginjal. Berbagai uji klinik terkendali dilakukan untuk melihat efek obat ini terhadap luaran ginjal pada pasien diabetes melitus dengan dan tanpa faktor risiko kardiovaskuler. Sebuah studi meta-analisis menunjukkan bahwa SGLT2 inhibitors secara signifikan menurunkan risiko luaran ginjal primer pada pasien dengan PGK dengan diabetes melitus dan dengan berbagai spektrum penurunan fungsi ginjal. Walaupun SGLT-2 inhibitor ini tidak menghasilkan manfaat terhadap gagal jantung pada pasien dengan PGK, namun pada pasien dengan penyakit jantung koroner, manfaat pada luaran ginjal terutama terjadi pada kelompok pasien PGK dengan makroalbuminuria.

Akhirnya, prospek hambatan terhadap SGLT-2 dengan obat SGLT-2 inhibitor dalam jangka Panjang dapat menghambat penyakit ginjal kronik dan sekaligus pada sindrom kardio-renal.

Kata kunci

Sodium glucose co-transporter - SGLT-2 inhibitor - luaran ginjal - diabetes melitus.

S 1A

Maximizing HFrEF Treatment Outcome by Adding SGLT2-i: Leveraging DAPA-HF Trial Result

Vebiona Kartini Prima Putri, MD

Working Group on Heart Failure and Cardiometabolic Indonesian Heart Association

Heart Failure Clinic, Awal Bros Pekanbaru Hospital

Abstract

Patients worldwide are affected by heart failure (HF) and prevalence is expected to increase with the aging population. Heart failure morbidity and mortality remain high and comparable to some of the most common cancers, despite advances in therapy. Type 2 diabetes is common (~20-40%) in patients with HF and is associated with worse symptoms and quality of life, a greater burden of HF hospitalisation, and higher mortality rates compared to patients without type 2 diabetes. SGLT-2 inhibitors (empagliflozin, canagliflozin, dapagliflozin) have a unique glucose-lowering effect via inhibiting glucose reabsorption in the proximal renal tubule. Due to the favourable outcomes in recent trials, SGLT-2 inhibitors are assumed to have cardioprotective properties, via several mechanisms, as reviewed. Notably, SGLT-2 inhibitors are the first class of glucose-lowering medications that have demonstrated a positive effect on risk reduction for HF hospitalisation. In DAPA-HF trial, among patients with heart failure reduced ejection fraction (HFrEF), the risk of worsening HF or death from cardiovascular causes was lower among those who received dapagliflozin than among those who received placebo, regardless of the presence or absence of diabetes. Dapagliflozin reduced the risk of the primary composite outcome in

patients with HFrEF, efficacy shown as early as 28 days. Dapagliflozin showing consistent efficacy in reducing the risk of first and recurrent HF events.

Keywords

heart failure with reduced ejection fraction; SGLT2-I, dapagliflozin; type 2 diabetes.

S 3B

The Association of Arterial Stiffness and Cognitive Decline

Hasan Sjahrir

*Department of Neurology
Universitas Sumatera Utara
Medan*

Abstract

Many studies have demonstrated an association of vascular factors and cerebrovascular disease with dementia and cognitive decline. Arterial stiffness is a predictor of cardiovascular disease and mortality. Recently the aortic pulse wave velocity index, a measure of arterial stiffness, was found to be of added value above traditional cardiovascular risk factors in the prediction of coronary heart disease and stroke.

Higher arterial stiffness is associated with higher systolic blood pressure, increased pulse pressure, and atherosclerosis. Hypertension and other vascular risk factors are important predictors of cognitive decline and dementia. Independent of traditional risk factors, arterial stiffness is associated with cerebral microvascular disease.

Aortic pulse wave velocity (aPWV) is a valid and noninvasive gold standard to measure of central arterial stiffness. Some studies systematic review and

meta analysis reported an association between increased arterial stiffness (measured by pulsewave velocity), and poor cognitive function and suggested that arterial stiffness may be a determinant of cognitive decline and dementia

Keywords

arterial stiffness - cognitive - aPWV - hypertension - dementia.

S 3C

Could We Reduce Cardiovascular Events by Improving Medication Adherence in Hypertensive Patients?

Mohammad Saifur Rohman

*Department of Cardiology and Vascular Medicine, Faculty of Medicine,
Universitas Brawijaya*

Abstract

Hypertension, which is defined as a blood pressure (BP) greater than 140/90 mmHg, is one of the most common treatable risk factors for CVD. However, recent data suggest that no more than 10% of treated patients achieve BP targets in many European countries. Inadequate control of BP exposes patients to a high risk of long-term cardiovascular (CV) complications, such as myocardial infarction (MI), heart failure, stroke, renal disease and premature mortality. For individuals aged 40–69 years, the risk of CVD-related mortality doubles with each 20 mmHg increment in systolic BP (SBP) or 10 mmHg increase in diastolic BP (DBP). CV complications arising from inadequately treated hypertension not only increase mortality but also impose a substantial financial burden due to increased hospitalization and healthcare costs.

Poor control of hypertension can be attributed to several factors. These include patient-related factors, environmental factors and physician-related factors. Poor compliance with therapy is a major problem among patients-related

factors and is one of the main causes of failure to adequately control BP. While many factors contribute to poor compliance, such as a patient's knowledge, attitudes and beliefs or medication cost, it is the complexity of the dosing regimen and drug-related side effects that most likely play the largest roles in medication adherence.

The complexity of the dosing regimen in hypertension treatment partly addressed by using fixed dose combination therefore might improve medication adherence. Improved convenience and a reduction in the complexity of a treatment regimen may translate into optimization of medication adherence and persistence, thus could conceivably help overcome one of the major barriers to effective BP control and thus prevent CV events. Meta-analysis of 14 studies suggested that single-pill combination therapy lead to improved medication adherence and persistence compared with free-equivalent combination therapy and may lead to better blood pressure control and prevent CV events.

In conclusion, improving medication adherence, at least in part achieved by single pill combination, could reduce CV event in hypertensive patients.

Keywords

Cardiovascular event, medication adherence, single pill combination.

Obesity, Sleep Apnea and Cerebral Cardiovascular Disease

Wardah Rahmatul Islamiyah

*Lecture Neurology Department Faculty Medicine Universitas Airlangga -
Univesitas Airlangga Hospital - RSUD dr. Soetomo Surabaya*

Abstract

Obesity, sleep apnea, and cerebral cardiovascular diseases are some of the most common diseases encountered by the worldwide population, with high social and economic burdens. Significant emphasis has been placed on obtaining blood pressure, body mass index, and placing importance on screening for signs and symptoms pointing towards cardiovascular disease. Symptoms related to sleep, or screening for sleep apnea has been overlooked by cardiac, diabetic, pulmonary and general medicine clinics despite recommendations for screening by several societies. This paper raises questions as to why obstructive sleep apnea screening should be included as yet another vital sign during patient initial inpatient or outpatient visit. In this paper, we discuss the growing epidemic of obesity and OSA, highlighting the common pathogenic hypotheses linking these risk factors to cerebral cardiovascular disease. We will also highlight the therapeutic rationale of sleep apnea as a way to reduce CVD risk. Obesity Hypoventilation Syndrome (OHS) will not only affect people under sleep in the respiratory function, but also lead to lack of ventilation during the day. The most important pathophysiological changes in OSA patients with OHS are hypoxemia and hypercapnia. With the increase of AHI, oxygen saturation at night will drop more significantly. In progressive or untreated OHS, biventricular heart failure, pulmonary hypertension, and volume overload are common. Patients with OHS have a lower quality of life with a higher overall symptom course, continued daytime sleepiness, and increased healthcare expenses. They are also at a higher risk of increased pulmonary and right-sided pressure overload complications,

significantly increasing morbidity, and have overall early mortality.

Keyword

Obesity, sleep apnea, obesity hypoventilation syndrome, cerebral cardiovascular disease.

S 4A

Renin-Angiotensin-Aldosteron System Blocker As A Tentative Treatment For COVID-19

DR. dr. Antonia Anna Lukito, Sp.JP(K)

Universitas Pelita Harapan/ RS Siloam Lippo Village, Tangerang, Indonesia

Abstract

Cardiac injury is a common condition among hospitalized patients with COVID-19, and it is associated with high risk of in-hospital mortality. Due to the novelty of the disease, evidence-based treatments remain uncertain, and most studies assessing specific medications for COVID-19 are inconclusive.

The viral surface spike (S) protein of COVID-19 binds to ACE2 following S protein activation by transmembrane protease serine 2. At first, the increase in ACE2 expression in patients receiving ACEis and ARBs was thought to increase susceptibility to SARS-CoV-2 infection. However, studies have shown that COVID-19 downregulates ACE2 expression and hinders its organo-protective effect. It has been hypothesized that the unregulated angiotensin II activity leads to multiple organ injury. Furthermore, ACE2 has been shown to protect the lungs from acute respiratory distress syndrome (ARDS). Hence, drugs that increase ACE2 may actually offer protection rather than harm. This is strengthened by recent findings that indicate the potential benefit of ARB use in patients with COVID-19 and hypertension.

The present prospective non-randomized study aimed to evaluate the efficacy and safety of candesartan in addition to the standard care regimen in patients with COVID-19 compared with standard care alone. Patients included in this study were hospitalized with COVID-19, aged 18–70 years, and had SARS-CoV-2 carriage confirmed by PCR from a nasopharyngeal swab sample at admission, regardless of clinical status. Patients in the intervention group received candesartan 4-32 mg OD, titrated according to BP tolerance.

To the authors' knowledge, this is the first prospective non-randomized open-label study to investigate the use of candesartan, an ARB, as a tentative treatment for COVID-19. Use of candesartan was found to have a non-significant trend towards shorter length of hospital stay, shorter time to improvement of chest x ray, and shorter time to negative swab. Interestingly, candesartan reduced the length of hospital stay in the non-obese subgroup after adjustment for age, gender, hypertension and T2DM. Candesartan reduced the length of hospital stay in the entire group and the non-obese subgroup, and reduced the time to improvement of chest X ray (a proxy of lung injury resolution) in the non-obese subgroup compared with the standard care regimen. Candesartan was also associated with a shorter time to negative PCR swab in the adjusted model.

S 4C

Should the hypertensive elderly be treated differently?

Adrianus Kosasih

Faculty of Medicine Trisakti University

With increasing age, the prevalence of hypertension will increase. This does not mean that high blood pressure in old age can be tolerated and considered normal. Hypertension in the elderly carries additional risks for cardiovascular events and mortality, and efforts to control blood pressure continue to be of benefit.

The causes of increased blood pressure in older people are different from those of young people. Often, arterial stiffness is the basis for an increase in systolic blood pressure accompanied by a flat or decreased diastolic blood pressure. This will lead to isolated systolic hypertension.

There are several things that must be considered in the management of hypertension in the elderly. Some guidelines recommend different or individualized blood pressure targets compared to younger subjects. Pathophysiological changes in the ability to maintain blood pressure homeostasis are often disrupted, so that elderly people are more susceptible to orthostatic hypotension. Furthermore, frailty and reverse causality should also be considered when administering treatment to the elderly.

S 4C

Blood Pressure Lowering and Cognitive Function in Elderly

Fasihah Irfani Fitri

Departemen neurologi FK USU/RSUP Haji Adam Malik/RS USU Medan

The prevalence of both hypertension and dementia is expected to increase as the population age globally. Several longitudinal studies have found significant causal association between hypertension and the increased risk of vascular cognitive impairment (VCI) and dementia, including Alzheimer's Disease (AD). Cognitive function is also now regarded as one of the hypertension-mediated organ damages (HMODs). Hypertension causes disruption in the structural and functional integrity of cerebral microcirculation which leads to maladaptation of cerebral circulation resulting in dysregulation of cerebral blood flow, blood brain barrier disruption, oxidative stress and impaired neurovascular coupling, as well as exacerbate the progression of AD pathology. Blood pressure variability in elderly also contributes to the progression and increased risk of VCI and dementia and correlates with poor outcome, related

to the episodes of both hyper and hypotension. Thus, BP variability must be taken into consideration in treating elderly with hypertension. Blood pressure (BP) lowering, especially in midlife, significantly reduces the risk of cognitive impairment and the development of dementia in later life. Current guidelines generally recommend to treat hypertension and aim to maintain systolic BP of 130 mmHg or less in midlife from around age 40 years. Antihypertensive treatment for hypertension is also known to be an effective preventive medication for dementia. The relationship between BP and cognitive function in oldest old shows an inverted U shape curve, meaning both high and low BP correlate with worse and faster decline in cognitive function. Thus, BP lowering in elderly needs to be individualized, considering several factors related to BP variability, frailty and individual tolerance.

PLENARY SESSION 2

Biochemical Analysis of Urine in Management of Non-Adherence to Antihypertensive Treatment

Prof Maciej Tomaszewski, MD, PhD

President, International Society of Hypertension (ISH)

Chair of Cardiovascular Medicine, University of Manchester - UK

Non-adherence to antihypertensive treatment is one of the key barriers to blood pressure control around the globe and the lead cause of pseudo-resistant hypertension. Poor adherence to blood pressure lowering treatment is linked directly to increased rates of cardiovascular morbidity and mortality. The lecture will provide the overview of the current diagnostic approach to non-adherence to antihypertensive treatment with a particular emphasis on the biochemical analysis of blood and urine. It will also deliver the new insights into management of non-adherence to blood pressure lowering therapy.

S 5A

Seven action approaches for management of hypertension in Asia (recommended by HOPE Asia Network)

Kazuomi Kario

Professor, Chairman

*Division of Cardiovascular Medicine, Department of Medicine,
Jichi Medical University School of Medicine (JMU)*

Asia is a diverse continent and hypertension prevalence rates vary between countries. Over the last 30 years, absolute blood pressure (BP) levels in Asia have increased to a great extent. The Asia BP@Home study which was

conducted by the Hypertension Cardiovascular Outcome Prevention and Evidence in Asia (HOPE Asia) Network investigated the BP control status in eleven Asian countries/regions with the use of same home BP device and measurement protocol. Marked differences in home BP control status between countries/regions were shown; these were highest in the Philippines, Korea, Japan, Pakistan, Thailand and Taiwan, and lowest in China and Indonesia. For improving hypertension management in Asia, the HOPE Asia Network recommends seven action approaches that include sodium intake reduction, strict BP control and home BP guided hypertension management.

Table 1. HOPE Asia Network: seven action approaches for the management of hypertension in Asia

1	Strict reduction of sodium intake
2	Strict BP control
3	Home BP-guided management
4	Reducing morning home BP as the first target and nighttime BP as the second target for high-risk patients
5	Choice of preferred antihypertensive agents
6	Widespread screening to improve awareness
7	Use of telemedicine strategies

BP, blood pressure.

Source: Hope Asia Network. J Clin Hypertension 2022, in press.

Highlights of 2022 Taiwan Hypertension Guidelines: Home BP monitoring, STEP, and Beyond

Tzung-Dau Wang, MD, PhD

*Professor of Medicine, National Taiwan University Hospital and College of
Medicine;*

Honorary President, Taiwan Hypertension Society

Given the well-known association between systolic blood pressures and aging, people intuitively assume that higher blood pressures are “normal” in the elderly and the treatment targets for hypertension should be looser in the elderly. Nevertheless, meta-analysis clearly demonstrates that the benefits of blood pressure-lowering are consistent in people younger and older than 65 years of age. The SPRINT trial and several meta-analyses demonstrates that, regardless of age and baseline blood pressures, further reduction of systolic blood pressures from 140 mmHg to below 120 mmHg was associated with 30% reduction of major cardiovascular events. These findings led to the adoption of a universal systolic blood pressure target of <130 mmHg in the American hypertension guidelines, which is in contrast to the European guidelines. However, the evidence suggesting reduction of systolic blood pressures to <130 mmHg conferring clinical benefit was exclusively from patients at intermediate or high cardiovascular risk. The evidence for patients with a borderline or low cardiovascular risk is lacking. Further, the clinical applicability and equivalent values of unattended office blood pressures adopted in SPRINT are debatable. The recently published STEP trial including 8511 Chinese and Taiwanese hypertensive patients clearly replicated what had been shown in the SPRINT, reduction of systolic blood pressure down to <130 mmHg was associated with 26% fewer cardiovascular events compared to keeping systolic blood pressure \geq 130 mmHg. In contrast, the annual cardiovascular event rate in standard-treatment group is 1.4%, indicative of a borderline/low risk status of STEP participants. The method of blood pressure measurement in STEP was conventional standardized office blood pressure measurement, thus could

be directly applicable in clinical practice. According to the totality of relevant evidence, the upcoming 2022 Taiwan Hypertension Guidelines recommend universal diagnostic criteria and treatment target blood pressures. To obtain more accurate assessment of blood pressure profiles for the real-world practice, home blood pressure monitoring is recommended as the foundation throughout all phases of blood pressure management, from diagnosis to long-term care. The diagnosis of hypertension (<130/80 mmHg) should be based on results of home blood pressure monitoring, conducted according to the “722” rule. Other details of the new 2022 Taiwan Hypertension Guidelines will be introduced during the Talk.

S 5B

Treating Hypertension in Patients with High Cardiovascular Risk

Estu Rudiktyo

*Department of Cardiology and Vascular Medicine, Faculty of Medicine,
Universitas Indonesia*

National Cardiovascular Center Harapan Kita

Hypertension is one of the most important causes of comorbidity and death worldwide, including Indonesia. Basic Health Research (Riskesdas) 2018 data showed that 34,1% Indonesian adults or approximately 63 million people suffered from hypertension. Uncontrolled hypertension eventually led to devastating complications in heart, brain, kidney and other organs, causing significant treatment cost and loss of productivity. Approximately 420.000 deaths yearly were attributed to hypertension in Indonesia.

According to the European Society of Cardiology (ESC), people can be classified into four categories based on their cardiovascular risk: low, moderate, high and very high risk. High risk individuals consist of they with documented atherosclerotic cardiovascular disease (ASCVD) such as history of previous ACS, stable angina, previous coronary revascularization, stroke or TIA and PAD.

People with diabetes with target organ damage, severe CKD and they with a calculated SCORE >10% of the 10-year risk of fatal CVD also included in this group. While people with significantly elevated cholesterol or blood pressure, diabetes without target organ damage, moderate CKD, patients with a family history of CVD and they with a calculated SCORE 5-10% are classified as a high-risk group. Hypertension management strategies are different between those groups and influenced by comorbidities that accompany hypertension.

There are several principles in choosing antihypertensive drugs in high and very high-risk group: (1) choose antihypertensive drugs that have additional benefits beyond lowering blood pressure; (2) choose antihypertensive drugs that also recommended in related comorbidity to reduce the number of prescribed drugs, reduce possible drug interactions and side effects, increase compliance, reduce costs, and avoid antihypertensive drugs that specifically contraindicated in related comorbidity.

Treatment of hypertension in chronic coronary syndrome

The management of hypertension in patients with chronic coronary syndrome or stable CAD is directed toward the prevention of death, infarct, and stroke; a reduction in the frequency and duration of myocardial ischemia; and relieve of the symptoms. A reasonable BP target for hypertensive patients with demonstrated CAD is <140/90 mm Hg. A lower target BP (<130/80 mm Hg) may be appropriate in some patients with CAD or those with previous MI, stroke or transient ischemic attack, or CAD equivalents. β -Blockers are the drugs of first choice for the treatment of hypertension in patients with CAD that causes angina. They alleviate ischemia and angina primarily as a function of their negative inotropic and chronotropic actions.

CCBs or long-acting nitrates should be prescribed for the relief of symptoms when β -blockers are contraindicated or cause unacceptable side effects in patients with stable angina. Long-acting dihydropyridine agents is preferred over non-dihydropyridines (diltiazem or verapamil) for use in combination with β -blockers to avoid excessive bradycardia. ACE inhibitors or ARBs should be prescribed to all stable CAD patients who also have hypertension, diabetes mellitus, an LV ejection fraction \leq 40%, or CKD unless contraindicated.

There are no special contraindications in hypertensive patients for the use of nitrates, antiplatelet or anticoagulant drugs, or statins for the management of angina and the prevention of coronary events, except that in patients with severe hypertension who are taking antiplatelet or anticoagulant, BP should be lowered without delay to reduce the risk of hemorrhagic stroke

Treatment of hypertension in diabetes

Hypertension is one of the most important comorbidities of diabetes, contributing significantly to death and disability. In these patients, BP should be lowered if $\geq 140/90$ mm Hg and treated to a target $< 130/80$ mm Hg ($< 140/80$ in elderly patients). RAAS inhibitor (and a CCB and/or thiazide-like diuretic) is recommended. According to the ADA recommendations, first-line therapy should include a drug class with demonstrated cardiovascular benefits such as a renin-angiotensin-aldosterone system (RAAS) inhibitor, thiazide-like diuretic, or dihydropyridine calcium channel blocker (CCB). There is no compelling evidence in favour of one drug class over another, except for data supporting the early use of RAAS inhibitors in patients with overt proteinuria (urine albumin-to-creatinine ratio > 300 mg/g).

Treatment of hypertension in chronic kidney disease

Hypertension is a major risk factor for the development and progression of albuminuria and any form of CKD. A lower EGFR is associated with resistant hypertension, masked hypertension, and elevated nighttime BP values. BP should be lowered if $\geq 140/90$ mm Hg and treated to a target $< 130/80$ mm Hg ($< 140/80$ in elderly patients). RAAS-inhibitors are first-line drugs because they reduce albuminuria in addition to BP control. CCBs and diuretics (loop-diuretics if EGFR < 30 ml/min/1.73m²) can be added.

ACE inhibitors and angiotensin II receptor antagonists (blockers) (ARBs) have both cardioprotective and renoprotective properties and are therefore of particular value in patients with CKD. RAAS blockade can reduce systolic BP around 20 mmHg in patients with hypertension and CKD. These agents offer a BP-independent reduction in proteinuria in both diabetic and non-diabetic and are therefore generally accepted as first-line management of hypertension in patients with proteinuric CKD. Potential side effects associated

with RAAS blockade include hypokalemia and the development of worsening renal function. A rise in serum creatinine is often seen after initiation of RAAS blockade due to a reduce in intraglomerular pressure.

References

1. Unger T, Borghi C, Charchar F, et al. 2020 International Society of Hypertension Global Hypertension Practice Guidelines. *Hypertension*. 2020;75:1334-1357
2. Pugh D, Gallacher PJ, Dhaun N. Management of Hypertension in Chronic Kidney Disease. *Drugs*. 2019 Mar;79(4):365-379. doi: 10.1007/s40265-019-1064-1. Erratum in: *Drugs*. 2020 Sep;80(13):1381
3. Rosendorff C, Lackland DT, Allison M et al. Treatment of Hypertension in Patients With Coronary Artery Disease. A Scientific Statement From the American Heart Association, American College of Cardiology, and American Society of Hypertension. *Circulation*. 2015;131:e435-e470
4. Shaikh A. A Practical Approach to Hypertension Management in Diabetes. *Diabetes Ther*. 2017 Oct;8(5):981-989. doi: 10.1007/s13300-017-0310-3. Epub 2017 Sep 19.
5. Passarella P, Kiseleva TA, Valeeva FV, Gosmanov AR. Hypertension Management in Diabetes: 2018 Update. *Diabetes Spectr*. 2018 Aug;31(3):218-224. doi: 10.2337/ds17-0085.

SGLT2-Inhibitor in Cardiology Guidelines: How did it evolve?

Bambang Budi Siswanto Prof,MD,PhD, FACC, FESC, FAPSC, FAsCC

Heart Failure Service National Cardiovascular Center University Indonesia

Working Group on Heart Failure and Cardiometabolic

Premier Jatinegara Hospital

New perspective in managing cardiovascular disease has emphasize the important of interrelated cardio-renal-metabolic system. The heart as the most metabolic demanding organ is very susceptible changes in volume and metabolism. However regulation of energy metabolism by liver and pancreas and fat is essential for healthy function of organs, especially the heart and kidney. The kidney play a key role in glucose and volume homeostasis, and blood pressure regulation.

Acute or chronic dysfunction in the heart, kidney or metabolism may induce dysfunction of the others. Each dysfunction organ has the ability to initiate and perpetuate disease in the other organs though haemodynamic, neurohormonal and immunological / biochemical feedback pathways. Cardiovascular risk factors such as diabetes, hypertension, obesity and dyslipidemia can lead to endothelial dysfunction, atherosclerosis micro albuminuria, macro albuminuria, coronary artery disease, MI and stoke, CKD, LV remodelling, heart failure ESRD and CV death.

People with T2D and CV disease die earlier than without it. HF is common comorbidity in patients with DM. Fifteen percents of patients with T2D also have HF. Two and half higher rate of CHF in T2D. Half of T2D also have CKD, and rate of CHF are 3 times higher in CKD. Prevalence of T2D is HF is 30%, further more 45 % of hospitalized HF had T2D.

Rational of SGLT2 inhibitor having role in managing CV events was started since previous Glucose Lowering Drugs showed increased risk of MI and CV death. Then since 2008 FDA require more safety and cardiovascular outcome trial of every Glucose Lowering Drugs. Three point MACE: CV mortality MI and Stroke, also prevent hospitalization for ACS and urgent revascularization procedures.

Results of CVOT, SGLT2Inhibitor (eg. Empaglifozin et al) prevent 3 P-MACE: 14%, CV death 38%, Heart Failure Hospitalization 35 %, All cause mortality 32 % and Renal Endpoints: 39 %. By diuresis, glucose excretion and natriuresis, intra glomerular pressure, LV wall stress, Inflammation and Oxidative stress, afterload preload improved. Last but not least, CV events, Kidney disease, Blood pressure, body weight and HbA1C improved. In 2016 ESC guidelines on HFrEF, empagliflozin delay the onset of HF with Class recommendation IIa, Level of Evidence B, but in 2019 class recommendation I and Level Of Evidence A. Recently in 2021 ACC Heart Failure Consensus Update, SGLT2 Inhibitor has become one of the first line of four pillars in HFrEF, besides MRA, betablocker and ARNI. Simplified Canadian HFrEF 2021 emphasize this four pillars as also ESC congress 2021.

Summary

New perspective to manage CV disease now focused on Cardio-Renal-Metabolism system. SGLT2 Inhibitor prove to reduce CV death and hospitalization and now become one of the four standard therapies for HFrEF.

Molecular Mechanism of SGLT2 Inhibitor on Cardio-Renal Protection

Bambang Purwanto

Abstract

The increasing incidence of Diabetes tipe 2 (T2D) causes the incidence of Cardio-Renal Syndrome, especially Cardio-Renal Syndrome Type 5. T2D will cause complications of heart and kidney damage. Mechanisms of Cardio-Renal Syndrome include increased blood glucose, which will increase Reactive Oxygen Spesies (ROS) , Nuclear Factor Kappa Beta (NFkB) , Cytokine-proinflammatory, Tranforming Growth Factor Beta 1 (TGFB1), Necrosis, Apoptosis, Fibrosis, Renin Angiotensin Aldosteron System (RAAS) , Sympathy Hypertonic, Atherosclerosis, Nephropathy, and Cardiomyopathy. Administration of Sodium-Glucose Transporter 2 Inhibitor (SGLT2-i) can reduce the reabsorption of glucose and sodium by proximal tubular cells so that it will improve the mechanism mentioned above, which in turn reduces morbidity and mortality of Cardio-Renal Syndrome.

Keywords

Cardio-Renal Syndrome Type 5, T2D, Cardiomyopathy, Nephropathy, SGLT2-i.

Sleep, Blood Pressure Variability, and Cardiovascular Outcomes

Artaria Tjempakasari

Division of Nephrology-Department of Internal Medicine

*Faculty of Medicine Airlangga University/Dr. Soetomo Teaching Hospital
Surabaya*

Abstract

Sleep disturbance and high blood pressure level variability (BPV) are known as risk factors for the cardiovascular disorder (CVD). Disorder in sleep such as obstructive sleep apnea (OSA) has been related to high BPV, which is in line with other cardiovascular events. Obstructive sleep apnea is very relevant to patients with high blood pressure, associated with worse functional outcomes and mortality. Obstructive sleep apnea is the most important secondary contributor factor in patients diagnosed with resistant hypertension. Blood pressure typically decreases in dipping patterns but is altered in patients with OSA. Variability in blood pressure could carry risks for higher incidence and active progression of vessel disease. Blood pressure level variability is outlined by constant dynamic and unconstrained fluctuations occurring over a lifetime. BPV can vary in short (seconds or minutes, beat-to-beat BPV), short-term (within a day, 24-h BPV), mid-term (between days, daily BPV), and long-term (between clinic visits over months and years, visit-to-visit BPV). These variations are repeated harmonically following the interaction of various internal and external stimuli, resembling the cardiovascular (CV) management systems (beat-to-beat BPV), biological time (24-h BPV), and differences due to the season (visit-to-visit BPV). A shred of growing evidence and some clinical trial has shown an independent relationship between short and long-term BPV against CV events and death in the past few years. Mean pressure level (BP) levels changes in BPV are related to organ injury resembling blood vessel stiffness, left ventricular hypertrophy, reduction of arterial renal blood flow,

subclinical brain small blood vessel, and the risk of developing a diabetic foot ulcer. Obstructive Sleep Apnea is also associated with free radicals, inflammation, endothelial dysfunction, and high sympathetic activity that increase throughout sleep, directly impacting breathing disorders and staying high during the alert state. These factors may increase BP levels and variability chronically.

S 6C

The Rational of Triple Combination of Hypertensive Treatment

I Made Junior Rina Artha

Department Cardiology and Vascular Medicine

Faculty of Medicine Udayana University/Sanglah Hospital Bali

Abstract

Raised blood pressure (BP) remains the leading cause of death and cardiovascular disease globally, accounting for 10.4 million deaths per year. Based on World Health Organization (WHO), around 1.13 billion people in the world have hypertension in 2015. Therefore, it is critical that updated evidence-based guidelines is implemented to reduce the global burden of hypertension.

The 2018 European Society of Cardiology (ESC)/European Society of Hypertension (ESH) guidelines identified that poor adherence to treatment and lack of therapeutic action when the patient's BP is uncontrolled are important causes of poor BP control. Overall, 43% to 66% of patients fail to adhere to their prescribed antihypertensive medications.

Based on trials, it is estimated that 3 antihypertensive agents are needed to achieve BP control in approximately 25% of patients. A single-pill combination

(SPC) will predictably increase the long-term adherence to therapy and thus the cardiovascular benefit. SPC also has potential for faster reduction in BP, and greater possibility in achieving target BP. SPC causes neutralization of the counter regulatory pathway activated by monotherapies, minimizes adverse events at half-standard doses, and the benefits are additive across blood pressure-lowering medication classes. The recent 2018 ESC/ESH guidelines for the management of arterial hypertension provide the strongest recommendation for starting antihypertensive treatment with SPC of two drugs followed by three drugs along with appropriate lifestyle interventions. The 2020 International Society of Hypertension (ISH) Global Hypertension Practice Guidelines also recommends the initiation of treatment with SPC. The initial choice for uncomplicated hypertension is using Angiotensin Converting Enzyme Inhibitor (ACEi) or Angiotensin Receptor Blocker (ARB) with Calcium Channel Blocker (CCB) and/or Diuretic. Additional spironolactone, alpha-blocker, or Beta Blocker (BB) can be considered in resistant hypertension. Other consideration depends on the comorbidity presented. Choosing the best SPC for individual patients is a practice of personalized medicine.

Keywords

Hypertension, anti-hypertensive medications, SPC.

S 7

Lifetime Cardiovascular Disease Risk of Young-Aged Hypertension

Hyeon Chang Kim, MD, PhD, FAHA

Department of Preventive Medicine

Yonsei University College of Medicine, Seoul, Korea

South Korea is among the countries with the most effective blood pressure control in the World. According to the Korea National Health and Nutrition Examination Survey (KNHANES) data, 28% of Korean adults have hypertension. About Two thirds of them were treated, and half of them

have controlled hypertension. Adherence to antihypertensive medication has been continuously improved in all regions. However, management of hypertension did not improve much in younger people. Awareness, treatment and adherence rates of hypertension improved a lot in middle-aged or older adults, but not so much in younger adults. Another characteristic of young-aged hypertension is that diastolic hypertension is common. As you may know well, elevated diastolic blood pressure (DBP) is more common in young people, and elevated systolic blood pressure (SBP) is more common in the elderly. As a result, isolated systolic hypertension (ISH) is the dominant type of hypertension in the elderly, while isolated diastolic hypertension (IDH) is the majority younger adults.

The absolute incidence of cardiovascular disease (CVD) is much higher in the elderly than in the younger. However, the blood pressure-associated relative risk of CVD is much higher in younger people. There is controversy over whether mild IDH, commonly found in young people, increases CVD risk or not. Some studies did not see significant association with CVD risk, but others reported significant association. We analyzed the data of over 6 million Koreans aged 20-39 and reported that both ISH and IDH were associated with CVD risk. The same is true for stage 1 IDH based on the 2017 ACC/AHA guidelines.

Young people often have a low short-term CVD risk but high long-term CVD risk. So, we developed and compared models for 10-year risk, premature risk, and lifetime risk. Outcomes were composite CVD events including MI, stroke and CVD death. We applied age-varying coefficients for each risk factors, and competing risk approach. In a hypothetical example of young age; 30 years old male, smoking, non-diabetic, SBP 150 mmHg, DBP 100 mmHg, cholesterol 240 mg/dl, and body mass index 25 kg/m². His 10-year risk is 14 times higher than the average risk of same sex and age. But still it is only 1.4%. But he has 12% risk of having CVD before age 60, and 42% of lifetime CVD risk. Doesn't he need preventive treatment? With 10-year CVD risk, it is difficult to distinguish high-risk people from others before middle age. However, with lifetime risk, high-risk people can be well distinguished in all age groups. Therefore, lifetime CVD risk model with age-varying coefficient may better identify target groups for CVD prevention.

CURRENT TOPICS OF BLOOD PRESSURE MONITORING– SELF-MEASUREMENT AT HOME AND AUTOMATED OFFICE MEASUREMENT

Kei Asayama

Teikyo University, Japan

Abstract

Although conventionally measured in-office blood pressure has been considered a gold standard for diagnosing and treating hypertension, recent guidelines also recommend out-of-office blood pressure measurement, i.e., ambulatory monitoring and self-measurement at home. The out-of-office blood pressure values have more prognostic ability than in-office blood pressure, and we can capture a great number of readings; furthermore, the out-of-office measurement values are free from the white-coat effect. In particular, self-measurement of blood pressure is more likely to reflect the ‘true’ blood pressure in individuals. The Japanese Society of Hypertension Guidelines (JSH 2019) prioritize home blood pressure-based diagnosis of hypertension—when a discrepancy of decision happens between the in-office and home measurements, home blood pressure has priority because of its higher prognostic value. Meanwhile, the advantages of so-called automated office blood pressure (AOBP) measurement have been highlighted in recent publications. To address the further issue of whether we should use unattended AOBP more than home blood pressure, we conducted the direct comparison of measurement values and short- to long-term reproducibility of AOBP, conventional office, and self-measured home blood pressure. We found a higher reproducibility of home blood pressure than in-office blood pressures, including AOBP, and AOBP cannot be an alternative to home blood pressure. Details of the findings and perspectives will be demonstrated in this lecture presentation.

Treating Hypertension and Lowering Risk of Atherosclerosis.

Arieska Ann Soenarta

Abstract

Hypertension (HT) is one of the most important risk factors for cardiovascular disease (CVD) mortality and morbidity and is the most common chronic disorder seen in the primary care.

Atherosclerosis is the underlying cause of CVD including coronary artery disease and stroke, being the main causes of death in Japan, the United States and Europe. The aim of treating HT is to reduce CV events, CV mortality and morbidity caused by HT. All anti HT agents have been shown to lower high blood pressure (BP) but of importance are agents that have anti-atherosclerotic properties as well. It is recognized that Calcium Channel Blocker's (CCB's) play an important role as an anti-HT agent. CCB's are a heterogeneous class, the Dihydropyridine (DHP)- and Non-Dihydropyridine (N-DHP) CCB's. All CCB's inhibit calcium ion influx into the smooth muscle cell (SMC) mainly through the L-type calcium channel, inducing vasodilation, reducing peripheral resistance resulting in lowering of the BP.

DHP-CCB's have a higher vascular selectivity and less inotropic and chronotropic activity comparing with the NDHP-CCB's. Many studies have shown, that DHP-CCB's have a direct anti-atherosclerotic effect on vascular cells, beyond their BP lowering effects. DHP-CCB's have proven in the protection of endothelial injury, inactivation of macrophage and improving of smooth muscle cells abnormalities. These studies have shown the anti-atherosclerotic properties in slowing the progression of atherogenesis and reducing the formation of new lesions, beyond their BP lowering effects. Clinical studies have shown these cardioprotective effects by decreasing CV events risks, Stroke (-21%),

CAD (-18%) and heart failure (-28%) in patients with or without CVD and regardless of BP values before treatment. DHP-CCB's have shown to suppress the production of Reactive Oxygen Species (ROS) and inflammatory factors.

Comparing with the first -and second generation DHP-CCB's, Lercanidipine, a third generation DHP-CCB have a high lipophilicity, resulting in a slow onset of action, long lasting SM relaxation and peripheral vasodilation. Lercanidipine increase Nitric Oxide bioavailability in HT patients and reduce the markers of oxidative stress and ROS, resulting in an inhibition of smooth muscle cell (SMC) proliferation and cholesterol accumulation; A study have shown a 35 % reduction of LDL ox in hypertensive patients using Lercanidipine with type 2 Diabetes Mellitus.

LDL ox reduction will result in reducing foam cell formation and atherosclerotic plaque formation.

References

1. Ishii N. et al. Anti-atherosclerotic Potential of Dihydropyridine Calcium Channel Blockers. *Journal of Atherosclerosis and Thrombosis*. 2012,19:693-704.
2. Cominacini L. et al. Comparative effects of different Dihydropyridines on the expression of adhesion molecules induced by TNF-alpha on endothelial cells. *J of Hypertens* 1999,17:183
3. Menne J. et al. Cellular and molecular mechanism of tissue protection by lipophilic Calcium Channel Blockers. *FASEB journal*. vol20. May, 2006.
4. Grassi G. et al. Lercanidipine in the Management of Hypertension : An Update. *J. Pharmacol Pharmacother* 2017, 8:155-65.
5. Rachman et al. Losartan and Lercanidipine attenuate LDL ox in patients with Hypertension and type2 Diabetes Mellitus. *Clin Pharmacol Ther* 2002,72,302-7.
6. Cerbai E. Mugelli A. L- and T- type calcium current. *Eur. Review for Medical and Pharmacological Sciences*, 2018;22:4025-4031.
7. Burnier M. Renal Protection with Calcium Antagonist: The Role of Lercanidipine. *Current Med Research and Opinion*, Sept 27, 2013.

The Benefit of Vasopressin Antagonist in Heart Failure Outpatient Setting

Paskariatne Probo Dewi

Gatot Soebroto Central Army Hospital

paskariatne@gmail.com

There are three major goals of treatment for patients with heart failure : (1) reduction in mortality, (2) prevention of rehospitalization due to worsening heart failure, and (3) improvement in clinical status, functional capacity, and quality of life.¹ Although some progress has been made in reducing mortality in heart failure patients, rates of rehospitalization continue to rise, and approaching 30% within 60 to 90 days of discharge.² The vast majority of acute decompensated heart failure episode that lead to frequent rehospitalization are characterized by increasing symptoms and signs of congestion with volume overload. The goal of therapy in those patients is the relief of congestion through achieving a state of euvolemia, mainly through the use of diuretic therapy. Diuretics have been conventionally utilized in daily clinical practice for pharmacological fluid excretion in heart failure. However, diuretics have multiple challenges in heart failure management. Potential risks of using loop diuretics include stimulation of the renin-angiotensin-aldosterone system (RAAS) and sympathetic nervous system, electrolyte disorders, and low cardiac output because of excessive negative intravascular water balance. Consequently, impaired response to diuretic therapy, termed diuretic resistance, is commonly encountered in heart failure patient management.³

The vasopressin type 2 (V2) receptor antagonist tolvaptan is an aquaretic agent that should be considered for heart failure patients presenting with hyponatremia, diuretic resistant, relative hypotension, and/or impaired renal function.² At first, vasopressin antagonist is used for hypervolemic and euvolemic hyponatremia patients, but due to its unique aquaretic effect, it has become an essential agent for managing volume overload heart failure

patients refractory to other conventional diuretic therapies, irrespective of the existence of hyponatremia. The initially proposed protocol is to continue vasopressin antagonist therapy only during hospitalization. However vasopressin antagonist has also been used for long-term ambulatory heart failure patients considering the favorable clinical outcomes experienced by the patients.⁴

The SMILE study, a post-marketing surveillance of tolvaptan, demonstrated the data of consecutive patients who had received tolvaptan between 2011 and 2015, with 43.6% of patients continued tolvaptan therapy for over two weeks in real-world clinical practice. Their clinical signs in lower limb edema, pulmonary congestion, dyspnea, third sound, and rales improved statistically significantly after two weeks.⁵ Sometimes there were non-responder patients whose urine volume remains unchanged and their clinical courses do not improve after administration of vasopressin antagonist therapy. Urine osmolality and urine aquaporin-2 level could be used as a predictor of response to vasopressin antagonist. In a fasting condition before taking any diuretics, the secretion of vasopressin is stimulated and the urine osmolality is in general increased due to reabsorption of pure water via activated aquaporin-2, which is located at the principal cells in the kidney. After the administration of tolvaptan, which antagonizes vasopressin type-2 receptor, activity of aquaporin-2 is inhibited and aquaresis is enhanced. As a result, urine osmolality and urine aquaporin-2 level at baseline are high in the healthy populations, i.e. responders, and decrease significantly following tolvaptan administration. In non-responders, urine osmolality and urine aquaporin-2 excretion remain lower irrespective of administration of tolvaptan, because of deterioration in collecting duct function.^{4, 6}

Patients with congestive heart failure who are admitted due to worsening of congestion refractory to over 40 mg/day of furosemide may receive tolvaptan at an initial dose of 7.5 -15 mg/day within several days. The measurement of biomarkers including urine osmolality is highly recommended to predict response to tolvaptan prior to the initiation of this therapy. Patients with renal dysfunction or hyponatremia, or those with a history of repeated hospitalizations due to worsening heart failure are good candidates for

vasopressin antagonist therapy. At discharge, we should attempt to reduce the dose of furosemide down to 40 mg/day, considering long-term prognosis. Patients satisfying above conditions may continue vasopressin antagonist therapy in the ambulatory situation to prevent worsening of renal function and heart failure rehospitalization.^{4, 7, 8}

References

1. McDonagh TA, Metra M, Adamo M, Gardner RS, Baumbach A, Bohm M, et al. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. *European heart journal*. 2021.
2. Gheorghiade M, Vaduganathan M, Fonarow GC, Bonow RO. Rehospitalization for heart failure: problems and perspectives. *Journal of the American College of Cardiology*. 2013;61(4):391-403.
3. Mullens W, Damman K, Harjola VP, Mebazaa A, Brunner-La Rocca HP, Martens P, et al. The use of diuretics in heart failure with congestion - a position statement from the Heart Failure Association of the European Society of Cardiology. *European journal of heart failure*. 2019;21(2):137-55.
4. Imamura T, Kinugawa K. Update of acute and long-term tolvaptan therapy. *Journal of cardiology*. 2019;73(2):102-7.
5. Kinugawa K, Inomata T, Sato N, Yasuda M, Shimakawa T, Bando K, et al. Effectiveness and adverse events of tolvaptan in octogenarians with heart failure. Interim analyses of Samsca Post-Marketing Surveillance In Heart faiLurE (SMILE study). *International heart journal*. 2015;56(2):137-43.
6. Imamura T, Kinugawa K, Minatsuki S, Muraoka H, Kato N, Inaba T, et al. Urine osmolality estimated using urine urea nitrogen, sodium and creatinine can effectively predict response to tolvaptan in decompensated heart failure patients. *Circulation journal : official journal of the Japanese Circulation Society*. 2013;77(5):1208-13.
7. Imamura T, Kinugawa K, Ohtani T, Sakata Y, Higo T, Kinugawa S, et al. Assessment of quality of life during long-term treatment of tolvaptan in refractory heart failure: design and rationale of the AQUA-TLV study. *International heart journal*. 2014;55(3):264-7.

8. Imamura T, Kinugawa K. Prognostic Impacts of Hyponatremia, Renal Dysfunction, and High-Dose Diuretics During a 10-Year Study Period in 4,087 Japanese Heart Failure Patients. *International heart journal*. 2016;57(5):657-8.

S7C

Preventive Effect of Antihypertensive Agents: Stratified of Age and Blood Pressure

Dr. dr. Maruhum Bonar Marbun, SpPD-KGH

Division of Nephrology and Hypertension

Department of Internal Medicine

FKUI-RSCM

Hypertension prevalence increases markedly with age.^{1, 2} There are several mechanisms involved in the development of high blood pressure (BP) in elderly. The first is arterial stiffening, which arises as the consequences of several structural and functional changes of large arteries caused by aging. The arterial stiffening will be followed by several cardiovascular adaptations and manifests as isolated systolic hypertension.³ Chronic and low grade inflammation is another mechanism contributes to the development of hypertension. Aging is a continual and progressive process that results in decreased physiologic functions across all organ systems. It will increase vulnerability to infection and disease. Inflammation is a localized response to tissue injury or infection which aids in the repair of damaged tissue and/or destruction of the harmful agent. During advanced age, the ability to resolve inflammation becomes impaired and therefore there would be sustained tissue infiltration of leukocytes and the chronic release of proinflammatory cytokines and chemokines. Generally, some factors are believed to increase inflammatory mediators such as comorbidities, obesity, insulin resistance, smoking, changes in circulating sex hormone concentration, and immunosenescence. In older people with hypertension, immunosenescence,

i.e deficiency of the immune system, is a dominant contributor. Inflammation in elderly also correlates with the increased reactive oxygen species (ROS) products. In other hand, there is aged-related declines in nitric oxide (NO) production and bioavailability making the imbalance between the production and breakdown of ROS. The last pathophysiology of hypertension of older people is the changes in neurohormonal profile. Aging process is related to increased sympathetic overactivity due to blunted baroreflex sensitivity. There are also increased plasma norepinephrin, low renin and low aldosterone levels as well as increased salt sensitivity.^{4,5}

Hypertension in older people have multi-dimensional health risks. It increases the risk of cardiovascular events, causes cognitive decline and dementia, decreases functional ability, and increases the risk of falls and fractures. All of these changes will contribute to its high risk of hospitalitation, institutionalization, and mortality.⁵

There are several specific considerations in evaluation and management of hypertension. First and foremost, physicians must take into account that managing old patients is highly time-consuming. Generally, BP should be measured in sitting position. To assess orthostatic reaction, BP should be measured first in supine followed by upright position Symptoms associated with high BP are much less frequent and less specific. The assessment and management of secondary hypertension are often more complicated (oftenly, medication-related BP elevation). Resistant hypertension may also be the effect of nonadherence (eg, because of cognitive decline), and possible causes should be appropriately investigated.⁶

The management of hypertension should start with non-pharmacologic treatment. Non-pharmacologic lifestyle measures should be encouraged in older adults, both to retard development of hypertension and as adjunctive therapy in those with hypertension. Non-pharmacologic lifestyle measures shown beneficial in elderly hypertensive subjects are regular physical activity, sodium restriction, weight control, smoking cessation, and avoidance of excessive alcohol intake.⁶

The pharmacologic treatment still have some benefits besides its side effects. Although the specific BP at which antihypertensive therapy should be initiated in the elderly is unclear, a threshold of 140/90 mm Hg in persons 65-79 years and a threshold systolic BP of 150 mm Hg in people age 80 years and older is reasonable. Most of the guidelines recommends BP Goals slight higher than general population. 2017 ACP/AAFP Recommended BP <150/90 as the goal for people age >65 years old. Initiation of antihypertensive drugs in the elderly should generally be at the lowest dose with gradual increments as tolerated. The choice of specific agents is dictated by efficacy, tolerability, presence of specific comorbidities, and cost. The choice of medication should consider the presentation of compelling indications. Special attention should be mind to avoid treatment-related side effects such as electrolyte disturbances, renal dysfunction, and excessive orthostatic BP decline.⁶⁻⁸

References

1. De Ruijter W, Westendorp RG, Assendelft WJ, den Elzen WP, de Craen AJ, le Cessie S, et al. Use of Framingham risk score and new biomarkers to predict cardiovascular mortality in older people: population based observational cohort study. *Bmj*. 2009;338.
2. Alsarah A, Alsara O, Bachauwa G. Hypertension management in the elderly: What is the optimal target blood pressure? *Heart Views: The Official Journal of the Gulf Heart Association*. 2019;20(1):11.
3. Hussain H, Hussain H. Frequency of Isolated Systolic Hypertension in Elderly Hypertensives. *PAKISTAN JOURNAL OF MEDICAL & HEALTH SCIENCES*. 2016;10(3):809-12.
4. Sun Z. Aging, arterial stiffness, and hypertension. *Hypertension*. 2015;65(2):252-6.
5. Buford TW. Hypertension and aging. *Ageing research reviews*. 2016;26:96-111.
6. Benetos A, Petrovic M, Strandberg T. Hypertension management in older and frail older patients. *Circulation Research*. 2019;124(7):1045-60.
7. Beckett NS, Peters R, Fletcher AE, Staessen JA, Liu L, Dumitrascu D, et al. Treatment of hypertension in patients 80 years of age or older. *New England Journal of Medicine*. 2008;358(18):1887-98.

8. Group SR A randomized trial of intensive versus standard blood-pressure control. *New England Journal of Medicine*. 2015;373(22):2103-16.

S 8

Knowledge Gaps Related to Hypertension in Women**U. Muscha Steckelings**

on behalf of the Women in Hypertension Research Committee of the International Society of Hypertension

Hypertension is the No 1 risk factor for death worldwide, since it is the main driver of the No 1 cause of death, cardiovascular disease.

For many years, it has been the prevailing view that CV disease is mainly a problem of males and that women are protected from hypertension and CV disease especially pre-menopause.

These views have lately been challenged by data showing that hypertension is more prevalent in women than in men from the 6th decade of life. Moreover, very recently, a study showed that the increase in systolic blood pressure over time is stronger in women than in men over the entire lifespan starting from the age of 20.

This new finding challenges the view that women are protected from developing hypertension, and it brings up a whole series of questions, for which we still do not have answers. Such questions are:

- ◆ What is the cause of the stronger increase in blood pressure in women? It is known that women differ from men regarding anatomy (incl. heart and vessels) and hormonal systems (e.g. RAS, endothelin, sympathetic nervous system). But what is the real impact of these differences on the development of hypertension and CV disease. And do other aspects play a role as well such as socioeconomic factors?

- ◆ Should the treatment goal in women be different from men? Is there a need for stricter blood pressure control?
- ◆ Should the choice of drugs for the treatment of blood pressure in women be different from men?
- ◆ Why are control rates in elderly women poor and how can treatment be improved?

There are currently no answers to these questions, because due to underrepresentation of women in clinical trials, respective evidence-based data are not available. This is also the case for data on the treatment of hypertension in pregnancy.

This lecture will try to raise awareness of knowledge gaps related to hypertension in women and emphasize the need for equal inclusion of women in clinical trials.

InaSH Abstract

Arterial Stiffness and The Risk of Cerebral White Matter Hyperintensity

Cep Juli

*Cerebrovascular Subdivision, Neurology Department, Medical Faculty,
Universitas Padjadjaran/Hasan Sadikin General Hospital, Bandung, Indonesia*

Arterial stiffness refers to the loss of arterial compliance and changes in vessel wall properties. Increased arterial stiffness is associated with several risk factors of cerebrovascular diseases (CVD). Arterial stiffness is associated with cerebral small vessel disease (CSVD), including white matter hyperintensity (WMH). The Comorbidities related to arterial stiffness are age, sex, race, hypertension, diabetes mellitus, metabolic syndrome, and lifestyle risk factors, such as alcohol, smoking, diet, and physical activity; of all these risk factors, age and hypertension are the most dominant risk factors for arterial stiffness. In

the general population, the prevalence of WMH ranges from 11-21% in adults, 80% in those more than 60 years old, females are more common than men. WMH is associated with cognitive decline and a greater risk of future stroke. From the pathologic point of view, arterial stiffening is collagen deposition, increased fibroblast, elastin degradation, renin-angiotensin-aldosterone signaling, vascular smooth muscle stiffness, and endothelial dysfunction. The condition of arterial stiffness such as concentric wall thickening, outward remodeling, and luminal dilation cause transmit pulsatile energy to downstream microcirculation of the brain make lower the impedance of the cerebral vasculature and damaging pulsatile energy to the capillary bed to reduce cerebral blood flow, and loss of adaptive response (autoregulation) make axonal injury and demyelination. The clinical manifestations of MMH are asymptomatic, cognitive deterioration, dementia, mood disorders, gait and motor disturbances, and lacunar strokes. The workup for WMH due to arterial stiffness is the laboratory for risk factors, a marker of arterial stiffness, and imaging. MRI is the standard gold imaging for WMH. The MRI findings are isointense or hypointense on T1-weighted, hyperintense on T2-weighted, gradient-echo, and FLAIR sequences. The management of WMH consists of a lifestyle intervention (aerobic exercise, weight loss, dietary sodium restriction, low-fat diet, and quit smoking) and pharmacological therapy such as anti-hypertension, diabetic treatment, lipid-lowering agents, and anti-aggregation platelet. The prognosis related to the progression of WMH depends on the performed pharmacological and non-pharmacological interventions in an early phase. Proper management can reduce the progressivity of arterial stiffness and WMH.

Keywords

Arterial stiffness, cerebral white matter hyperintensity.



16th

INASH VIRTUAL
SCIENTIFIC MEETING



Free Paper Abstract

FEBRUARY 19-20, 2022

YOUNG INVESTIGATOR AWARD SCHEDULE

Venue: Channel ID

YIA Number	Title	Institution	Presenter
YIA001	The Role of Peak Atrial Longitudinal Strain in Hypertension Heart Disease as an Indicator for Early Diastolic Left Ventricle Impairment	Department of Cardiology and Vascular Medicine, Universitas Andalas / DRM: Djamil Hospital, Padang.	Anak Agung Oka Shindu Phalguna
YIA002	Correlation Between Diabetes-Related Clinical Indices And Pulse Wave Velocity In Type 2 Diabetes Patients With Hypertension	Department of Internal Medicine, Faculty of Medicine Universitas Indonesia	Anandhara Indriani Khumaedi
YIA003	The Clinical Saga of Renal Denervation in Uncontrolled Hypertension: An Updated Meta-Analysis of Randomized Sham-Controlled Trials	Sam Ratulangi University	Nikita Pratama Toding Labi
YIA004	A NOVEL PEPTIDE ELABELA IS ASSOCIATED WITH HYPERTENSION-RELATED SUBCLINICAL ATHEROSCLEROSIS	Department of Cardiology and Vascular Medicine, Faculty of Medicine Universitas Indonesia	Hendrianus
YIA005	Impact of Day-to-Day Blood Pressure Variability to In-Hospital Mortality in Patients with COVID-19 and Efficacy of Antihypertensive Agents	Faculty of Medicine, Udayana University	Gusti Ngurah Prana Jagannatha
YIA006	Hyperuricemia And Risk of Hypertension Resistant to Therapy: A Systematic Review and Meta-Analysis	Cardiology Resident, Department of Cardiology and Vascular Medicine, Gadjah Mada University, D.I. Yogyakarta, Indonesia	Zakka Zayd Zhullatullah Jayadisastra

Young Investigator Award

Free Paper

YIA001

The Role of Peak Atrial Longitudinal Strain in Hypertension Heart Disease as an Indicator for Early Diastolic Left Ventricle Impairment.

Phalguna S¹, Nani¹, Yanni M¹

¹Department of Cardiology and Vascular. Andalas Universitas, M. Djamil Hospital, Padang.

Abstract

Background

Patient with Hypertension Heart Disease (HHD) increase LV filling pressure and cause remodelling of LV and LA structure. That mechanism leads high pressure in LA. LA strain can be used to gain insight into LA reservoir, conduit, and pump functions. PALS is reflection of LA reservoir function. Often reduced in patient with increased LV filling pressure. LA systolic strain is very accurate marker for estimating raised pulmonary capillary wedge pressure (PCWP). PCWP (E/e') is one of the indicator for diastolic LV dysfunction.

Objective

Comparison PALS in patient with controlled HHD and Non-HHD as an indicator for early diastolic LV Impairment.

Methods

60 patients with normal EF (50% controlled HHD and 50% Non-HHD) were measured PALS used speckle tracking 2D echocardiography. Data were

collected from mean of peak LA Strain. Distribution data of PALS was examined with Shapiro-wilk test. Mean PALS between patient with Controlled HHD and Non-HHD were compared, examined used t-pair test.

Result

Total sample 56,7% male and 43,3% female. Mean of hypertension 9 years, age 58 vs 54 (HHD vs Non-HHD), E/e' 8,34 vs 6,06 (HHD vs Non-HHD), LAVI 24,04 vs 18,03 (HHD vs NonHHD). Comparison between PALS in HHD and Non-HHD have significant result (25,05% vs 46,36%, $p=0,001$).

Conclusion

Patient with HHD decrease mean of PALS. Decrease of PALS is indicated with increased of LV filling pressure. Patient with low PALS can be an indicator for early diastolic LV impairment leading to HFpEF.

Keyword

Peak Atrial Longitudinal Strain, Hypertension Heart Disease, LV diastolic impairment

YIA002

Correlation Between Diabetes-Related Clinical Indices And Pulse Wave Velocity In Type 2 Diabetes Patients With Hypertension

[Anandhara Indriani Khumaedi¹](#), [Pringgodigdo Nugroho¹](#),
[Dyah Purnamasari²](#)

¹*Nephrology and Hypertension Division, Faculty of Medicine Universitas Indonesia, Ciptomangunkusumo General Hospital*

²*Endocrinology Division, Faculty of Medicine Universitas Indonesia, Ciptomangunkusumo General Hospital*

Abstract

Background and Objective

It is known that arterial stiffness, an early vascular changes index, is influenced by diabetes and hypertension. It is also a strong predictor to mortality in type 2 diabetes melitus (T2DM). This study was aimed to see correlation of diabetes-

related indices with pulse wave velocity (PWV) in patients with T2DM and hypertension.

Method

This is cross sectional study involving T2DM patients with hypertension in endocrinology clinic in RSCM. Blood pressure was measured using Omron® automatic sphygmomanometer. Central Pulse Pressure (CPP) , amplification and PWV was measured using SphygmoCor®XCEL. Diabetes-related parameters measured in this study are duration, A1C and albumin-to-creatinine ratio (ACR).

Result

Out of 47 subjects, most of them are female (68%), median age 51years (IQR 10,50), median waist circumference (WC) 96cm (IQR 9,6) and mean BMI 27kg/m² (SD 3,90). Median systolic is 153mmHg (IQR 15), diastolic 91mmHg (IQR 92), amplification 18mmHg (SD 6,0) and median CPP 43mmHg (IQR 12). Mean PWV is 7,5 m/s (SD 1,22). Subjects showed inadequate control of diabetes (median A1C 7,8% [IQR 2,8]) and macroalbuminuria (median ACR 763 mg/grCr [IQR 2,8]). We found positive correlation between PWV and SBP ($r=0,312$; $p=0,016$), amplification ($r=0,370$; $p=0,05$), CPP ($r=0,370$; $p=0,007$), diabetes duration ($r=0,476$; $p<0,005$), A1c ($r=0,417$; $p=0,002$), ACR ($r=0,511$; $p<0,005$) and WC ($r=0,290$; $p=0,024$). Multivariate analysis showed weak association between PWV and WC, CPP and diabetes duration ($R^2=0,338$).

Conclusion

In this study, ACR and A1c didn't show direct significant relationship to PWV. Systolic amplification may mediate the relationship between ACR and A1c to PWV, since these indices associated with vascular changes. This emphasized the importance of BP control for preventing CV events in T2DM.

The Clinical Saga of Renal Denervation in Uncontrolled Hypertension: An Updated Meta-Analysis of Randomized Sham-Controlled Trials

[Nikita Pratama Toding Labi](#)¹, [Gusti Ngurah Prana Jagannatha](#)²,
[Wingga Chrisna Aji](#)³, [Yusra Pintaningrum](#)⁴

¹*Faculty of Medicine, Sam Ratulangi University, Manado, Indonesia*

²*Faculty of Medicine, Udayana University, Denpasar, Indonesia*

³*Faculty of Medicine, Yogyakarta Muhammadiyah University, Yogyakarta, Indonesia*

⁴*Faculty of Medicine, Mataram University/General Hospital of West Nusa Tenggara Province, Mataram, Indonesia*

Abstract

Background

Renal denervation (RDN) with catheter ablation has shown promising yet conflicting results in the management of uncontrolled hypertension. With the availability of recent randomized sham-controlled trials, we decided to perform an updated meta-analysis.

Objective

To examine the utilization of renal denervation in patients with uncontrolled hypertension.

Method

A systematic search in electronic databases was conducted. We included randomized sham-controlled trials comparing RDN and sham procedure in patients with uncontrolled hypertension. Included studies were evaluated for risk of bias. Our outcomes of interest were 24-hour ambulatory blood pressure (BP) and office BP. We performed fixed and random-effects meta-analysis using the inverse variance method to calculate the mean difference (MD) and 95% confidence interval (CI).

Result

Final analysis included 10 studies with a total of 1,571 patients. With the median follow-up period of 6 months, RDN was associated with a significant decrease in 24-hour ambulatory BP (Systolic: MD -3.50 mmHg, 95% CI -4.75, -2.25, $p < 0.00001$, $I^2 = 0.00$; Diastolic: MD -1.97 mmHg, 95% CI -2.74, -1.20, $p < 0.00001$, $I^2 = 0.31$) compared to sham procedure. Similarly, office BP was reduced significantly with RDN when compared to sham procedure (Systolic: MD -4.89 mmHg, 95% CI -7.67, -2.10, $p = 0.04$, $I^2 = 0.51$; Diastolic: MD -3.07 mmHg, 95% CI -4.14, -2.00, $p < 0.00001$, $I^2 = 0.38$). Further subgroup analysis showed that radiofrequency RDN was associated with a significant reduction in both 24-hour ambulatory and office BP, while ultrasound RDN was not associated with such differences.

Conclusion

This updated meta-analysis suggests that RDN is associated with statistically significant improvement in uncontrolled hypertension management.

YIA004

A NOVEL PEPTIDE ELABELA IS ASSOCIATED WITH HYPERTENSION-RELATED SUBCLINICAL ATHEROSCLEROSIS

[Hendrianus](#), Suko Adiarto, Radityo Prakoso, Isman Firdaus, Suci Indriani, Estu Rudiktyo, Bambang Widyantoro, Taofan Taofan, Ade Meidian Ambari, Renan Sukmawan

Department of Cardiology and Vascular Medicine, Faculty of Medicine Universitas Indonesia, National Cardiovascular Center Harapan Kita

Abstract

Background

Elabela is a newly identified peptide which, alongside apelin, acts as an endogenous ligand that activates the angiotensin receptor-like 1 receptor (APJ). Previous clinical studies have shown the association of elabela with hypertension, but information about the role of elabela in hypertension-related atherosclerosis is scarce.

Objectives

To determine the association between plasma elabela peptide levels and subclinical atherosclerosis in the hypertensive population.

Methods

A total of 104 subjects with hypertension were included in a cross-sectional study. Plasma elabela levels were measured using enzyme-linked immunosorbent assay (ELISA) by extracting the peptide following the manufacturer's instructions. The subclinical atherosclerosis parameter was assessed by measuring the carotid intima-media thickness (IMT) using ultrasound.

Results

Compared to stage 1, elabela levels decreased in stage 2 of the hypertension group (0.14 [0.09, 0.23] ng/ml vs. 0.23 [0.13, 0.45] ng/ml; $P = 0.000$), and in the group with increased carotid IMT compared to normal IMT (0.15 [0.10, 0.23] ng/ml vs. 0.24 [0.13, 0.38] ng/ml; $P = 0.005$). Additionally, a linear correlation analysis showed that elabela had a significant negative correlation with systolic blood pressure ($r = -0.340$, $P = 0.000$) and carotid IMT ($r = -0.213$; $P = 0.030$). In multivariate analysis, decreased elabela levels (cut-off 0.155 ng/ml) were associated with the higher cardiovascular risk group in this study (OR 5.0, 95% CI 1.8-13.5, $P < 0.001$).

Conclusion

This study is the first to demonstrate the association of circulating elabela with carotid IMT in hypertensive patients, implicating that elabela is involved in the pathogenesis of hypertension-related subclinical atherosclerosis. Reduced elabela levels were also associated with increased cardiovascular risk.

Keywords

Elabela, hypertension, subclinical atherosclerosis, carotid intima-media thickness

Table 1. Basic characteristics of the study population

	Total (n = 104)	Hypertension		P value	Carotid IMT		P value
		Stage 1 (n = 51)	Stage 2 (n = 53)		Normal (n = 51)	Increased (n = 53)	
Age, years	58±9.13	56.92 ±9.54	58.77±8.84	0.307	56.59±9.45	59.09±8.85	0.166
Older age, n (%)	70 (67)	33 (65)	37 (70)	0.579	31 (61)	39 (74)	0.164
Male sex, n (%)	47 (45)	23 (45)	24 (45)	0.985	18 (35)	29 (55)	0.047*
Smoker, n (%)	35 (34)	16 (31)	19 (36)	0.629	18 (35)	17 (32)	0.728
Diabetes, n (%)	9 (9)	3 (6)	6 (11)	0.324	3 (6)	6 (11)	0.324
Dyslipidemia, n (%)	45 (43)	24 (47)	21 (40)	0.444	22 (43)	23 (43)	0.979
Physical inactivity, n (%)	45 (43)	23 (45)	22 (42)	0.712	22 (43)	23 (43)	0.979
BMI, kg/m ²	24.82±4.28	24.95±3.98	24.69±4.55	0.761	24.87±4.62	24.76±3.93	0.894
≥25 kg/m ² , n (%)	50 (48)	21 (41)	29 (55)	0.167	20 (39)	30 (57)	0.076
Waist circumference	87.39±10.52	87.63±9.97	86.63±11.03	0.628	86.12±11.06	88.08±9.91	0.343
M >90 cm; F >80 cm, n (%)	55 (53)	25 (49)	30 (57)	0.439	26 (51)	29 (55)	0.703
Elabela, ng/ml	0.18 (0.11, 0.33)	0.23 (0.13, 0.45)	0.14 (0.09, 0.24)	0.000**	0.24 (0.13, 0.38)	0.15 (0.10, 0.23)	0.005**

BMI, body mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure; IMT, intima-media thickness.

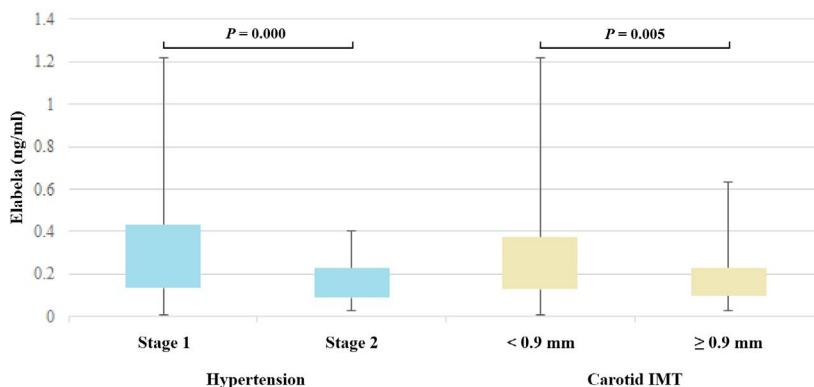


Figure 1. Comparison of elabela concentrations with hypertension stage and carotid IMT. IMT, intima-media thickness.

Table 2. Elabela correlation with variables.

	<i>r</i>	<i>P</i> value
Age	-0.005	0.962
BMI	0.048	0.631
Waist circumference	0.045	0.651
SBP	-0.340	0.000**
DBP	-0.129	0.191
Carotid IMT	-0.213	0.030*

BMI, body mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure; IMT, intima-media thickness. **P* < 0.05, ***P* < 0.01.

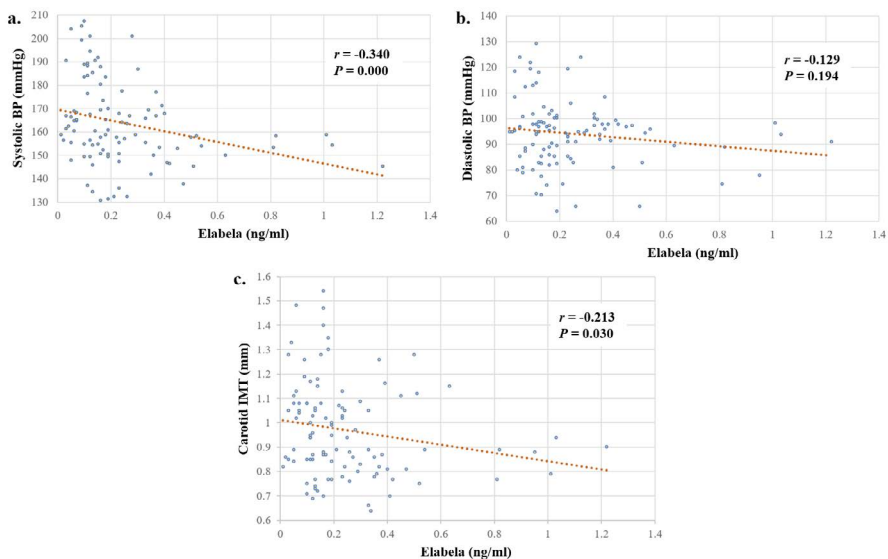


Figure 2. Linear correlation between elabela and a) systolic BP, b) diastolic BP, and c) carotid IMT. BP, blood pressure; IMT, intima-media thickness.

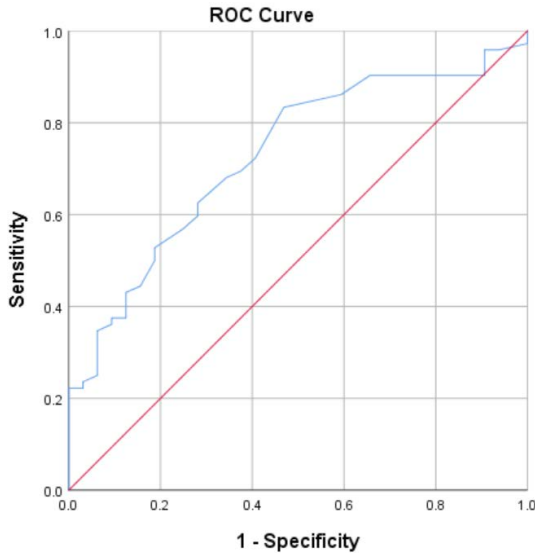


Figure 3. Receiver operating characteristic (ROC) analysis for elabela to predict the high-risk group.

Table 3. Logistic regression analysis assessing the association between the high-risk group and variables.

	Univariate analysis			Multivariate analysis		
	OR	95% CI	P value	OR	95% CI	P value
Elabela < 0.1550 ng/ml	4.1	1.7-9.8	0.002**	5.0	1.8-13.5	0.002**
Older age	1.4	0.5-3.4	0.509			
Male sex	1.9	0.8-4.4	0.133	3.0	1.1-8.7	0.039*
Smoker	1.3	0.5-3.1	0.580			
Diabetes	3.1	0.8-12.6	0.105	6.5	1.3-32.7	0.023*
Dyslipidemia	1.0	0.4-2.4	0.947			
Physical inactivity	1.2	0.5-2.9	0.621			
Obesity	2.8	1.2-6.7	0.019*	2.9	1.0-8.5	0.056
Central obesity	2.1	0.9-5.1	0.086	2.4	0.7-7.5	0.149

OR, odds ratio; CI, confidence interval. *P < 0.05, **P < 0.01.

Impact of Day-to-Day Blood Pressure Variability to In-Hospital Mortality in Patients with COVID-19 and Efficacy of Antihypertensive Agents

[G.N.P. Jagannatha¹](#), [I.W.A.S. Pradnyana¹](#), [S. Kamardi¹](#),
[A.A.A.D.A. Yasmin²](#)

¹Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia

²Department of Cardiology and Vascular Medicine, Sanglah General Hospital, Udayana University, Denpasar, Bali, Indonesia

Abstract

Background

Blood pressure variability (BPV) plays an important role in hypertensive patients, and frequently associated with organ damage, but the impact of BPV to outcome in COVID-19 patients remain unclear.

Objectives

To investigate the relationship between BPV and in-hospital mortality, hypertensive status, severity of COVID-19, and antihypertensives in patients with COVID-19.

Methods

This was a cohort prospective study that enrolled 351 patients hospitalized with COVID-19. Subjects were classified according to the presence of hypertension, the severity of COVID-19, and BPV status. Mean Arterial Pressure (MAP) was measured at 6 a.m. and 6 p.m. during hospitalization, and BPV was calculated as the coefficient of variation of MAP (MAP_{CV}). MAP_{CV} values above the median were defined as high BPV. We compared the hypertensive status, COVID-19 severity, in-hospital mortality and antihypertensive agents between the BPV groups.

Results

The mean age was 53.85 ± 18.84 years-old. Subjects with high BPV were significantly associated with hypertension status (PR=1.38; 95%CI=1.13-1.70; $p=0.003$) or severe COVID-19 (PR=1.39; 95%CI=1.09-1.76; $p=0.005$). High BPV also significantly increased risk of mortality (HR=2.30; 95%CI=1.73-3,86;

$p < 0.001$). Patients with severe COVID-19, hypertension, and high BPV had the highest risk of in-hospital mortality (HR=3.51; 95%CI=2.32-4.97; $p < 0.001$) compared to other groups. In COVID-19 patients with hypertension, CCB had significantly decreased BPV (PR=0.50; 95%CI=0.27-0.93; $p = 0.004$) and mortality (HR=0.17; 95%CI=0.05-0.56; $p = 0.004$).

Conclusions

High BPV was associated with hypertensive status and severe COVID-19, and these factors together increased in-hospital mortality. CCB are antihypertensive agents that were potentially effective in suppressing BPV and mortality in COVID-19 patients.

Keywords

Blood pressure variability, hypertension, COVID-19, mortality.

YIA006

Hyperuricemia And Risk of Hypertension Resistant to Therapy: A Systematic Review and Meta-Analysis

[Z. Z. J. Jayadisastra¹](#), [I. K. Kurniawan²](#), [N. Purnomo³](#)

1Cardiology Resident, Department of Cardiology and Vascular Medicine, Gadjah Mada University, D.I. Yogyakarta, Indonesia

2General Practitioner at Dr. Oen Solo Baru Hospital, Surakarta, Indonesia

3General Practitioner at Siloam Hospital TB Simatupang, DKI Jakarta, Indonesia

Abstract

Background

Hypertension is a common public health problem throughout the world. One of the most common risk factors of hypertension is hyperuricemia. However, there are limited data for the effect of hyperuricemia in hypertension undergoing therapy. The objective of this study is to discover the relationship between hyperuricemia and the risk for resistant hypertension.

Methods

Systematic literature search was conducted based on the PRISMA flow diagram, from PubMed, PubMed Central, Cochrane, and Google Scholar

with keywords: “hyperuricemia”, “uncontrolled hypertension”, “resistant hypertension”, and “hypertension”. Data extraction was done and Newcastle-Ottawa Scale was used to assess the study quality. The data was then analyzed using Revman 5.4.1 (Cochrane).

Results

Four selected cohort studies with a total of 8247 patients. All of the included studies have good quality. From the data analysis, we found that hyperuricemia increased the odds of hypertension becoming resistant to therapy (OR: 2.29 [95% CI 1.26, 4.14]; p: 0.006). Forest plot showed the data was evenly distributed.

Conclusion

Hyperuricemia increases the risk of hypertension being resistant to therapy. Therefore, uric acid levels should be controlled in hypertensive patients to optimize the effect of hypertension therapy.

Keywords

Resistant hypertension, uncontrolled hypertension, hyperuricemia

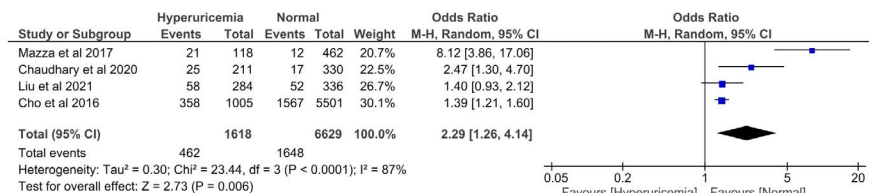


Figure 1. Forest plot of meta-analysis between hyperuricemia and the risk of resistant hypertension.

MODERATED POSTER 1 SCHEDULE

MP Number	Title	Institution	Presenter
MP001	BETA-BLOCKER TREATMENT OPTIONS AND RISK OF ERECTILE DYSFUNCTION: A SYSTEMATIC REVIEW AND META-ANALYSIS	Faculty of Medicine, University of Mataram	Rana Amalia Sulastrri
MP002	Effect Of Vitamin D On Blood Pressure In Patients With Hypertension A Systematic Review And Meta Analysis	Faculty of Medicine, Universitas Diponegoro, Semarang	Tinanda Tarigan
MP003	SYSTOLIC BLOOD PRESSURE AS RISK FACTOR ASSOCIATED WITH PERSISTING PROTEINURIA AFTER DELIVERY IN WOMEN WITH PREECLAMPSIA	Universitas Airlangga	Audy Ariana
MP004	Newly-Diagnosed Hypertension during Admission for COVID-19 Care and Its Subsequent Effect on Outcome of Treatment: A Prospective Cohort Study	Gelora Joko Samudro Centre for COVID-19 Care	Muhammad Afif Sholehuddin
MP005	CAROTID ARTERY ULTRASOUND PROFILE AND COGNITIVE IMPAIRMENT IN CORONARY ARTERY DISEASE	Department of Neurology, Faculty of Medicine Universitas Indonesia "Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia	Rizqi Amanda Nabillah

MP Number	Title	Institution	Presenter
MP006	Hypertension and Mortality Predictor within 10 Days among End-Stage Renal Disease with Covid-19 Infection	Roemani Muhammadiyah Hospital, Semarang, Indonesia.	Langgeng Perdhana

Moderated Poster

Free Paper**MP001**

Beta-blocker Treatment Options and Risk of Erectile Dysfunction: A Systematic Review and Meta-Analysis

[Rana Amalia Sulastr¹](#) [Alfian Rahman Hadi¹](#) [Yusra Pintaningrum²](#)

¹Faculty of Medicine, University of Mataram, Indonesia

²Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Mataram, Indonesia

Background

Erectile dysfunction (ED) has a variety of causes. Certain antihypertensive medications usage is known to exacerbate and increase the risk of ED. One type of antihypertensive agent associated with a greater risk of ED is beta-blockers. Among the available options of beta-blocker, further comparison needs to be done to evaluate which beta-blocker has a lower risk of ED.

Objective

This study aimed to assess which beta-blocker has a lower risk of ED.

Methods

Search for published articles using the PRISMA (Preferred Reporting, Items for Systematic Reviews and Meta-Analysis) method conducted on PubMed, Cochrane Library, and Medline databases published in the last 20 years on "beta-blocker" and "erectile dysfunction". Further systematic review and meta-analysis using RevMan version 5.4 were performed based on the included published articles.

Results

Based on 6 studies included with total of 1578 participants, 5 kinds of beta-blocker used on the participants include atenolol (17,8%), bisoprolol (31,1%),

carvedilol (10,8%), metoprolol (9,8%), and nebivolol (30,5%). Nebivolol (RR = 0.87: 95% CI: 0.79-0.95) found to has the lowest risk ratio compared with another beta-blocker such as carvedilol (RR = 1.00: 95% CI: 0.92-1.09), metoprolol (RR = 1.05: 95% CI: 0.94-1.17), atenolol (RR = 1.07: 95% CI: 0.98-1.16), and bisoprolol (RR = 1.37: 95% CI: 1.01-1.87).

Conclusions

Nebivolol is a beta-blocker option recommended to avoid ED because of its lower risk of ED compared with other beta-blockers. Bisoprolol was found to be associated with a higher risk of ED, followed by atenolol, metoprolol, and carvedilol, respectively.

Keywords

beta-blocker, erectile dysfunction.

MP002

Effect Of Vitamin D On Blood Pressure In Patients With Hypertension: A Systematic Review And Meta Analysis

[Tinanda Tarigan](#)¹, [Daniel Sukmadja](#)², [Kaka Citta Prasiddha](#)³, [Ajeng Ciptasari](#)⁴, [Rizkan Triatmaja](#)⁴

¹Faculty of Medicine, Universitas Diponegoro, Semarang

²Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta

³Faculty of Medicine, Universitas Islam Indonesia, Yogyakarta

⁴Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta, Yogyakarta

Abstract

Background

Hypertension has become a major risk factor for cardiovascular disease and a common health problem around the world. Recent evidence indicated that hypertension was associated with low levels of vitamin D. Several studies explored the effect of vitamin D supplementation on blood pressure (BP), but whether vitamin D supplementation reduces BP remains unclear in patients with hypertension.

Objective

This study aimed to evaluate the effect of vitamin D on blood pressure in patients with hypertension.

Methods

We enrolled randomized controlled trials (RCTs) from PubMed, MEDLINE, Cochrane Library, and Google Scholar that were published in 1988-2020. Studies that used vitamin D supplementation among people with hypertension were included. The BP changes were combined in a random-effects model and corresponding 95% confidence intervals (95% CIs) of blood pressure across RCTs.

Results

Eight RCTs including 804 participants fulfilled the inclusion criteria. We found a statistically non-significant reduction in systolic blood pressure in the vitamin D group compared with placebo [-2.7 mmHg, 95% confidence interval (CI) -6.67 to 1.27]. No statistically significant reduction was seen in diastolic blood pressure (-1.33 mmHg, 95% CI -3.27 to 0.62).

Conclusion

This meta-analysis indicated that supplementation with vitamin D is ineffective as an agent to reduce BP in patients with hypertension.

Keywords

vitamin D, hypertension, blood pressure, systolic, diastolic.

MP003

SYSTOLIC BLOOD PRESSURE AS RISK FACTOR ASSOCIATED WITH PERSISTING PROTEINURIA AFTER DELIVERY IN WOMEN WITH PREECLAMPSIA

**A. ARIANA¹, ADITIAWARDANA², ADITIAWARMAN³,
M. THAHA⁴**

¹Department of Internal Medicine, Faculty of Medicine, Airlangga University - dr. Soetomo Hospital, Surabaya, Indonesia

²Nephrology Division, Department of Internal Medicine, Faculty of Medicine, Airlangga University - dr. Soetomo Hospital, Surabaya, Indonesia

³Fetomaternal Division, Department of Obstetrics and Gynaecology, Faculty of Medicine, Airlangga University - dr. Soetomo Hospital, Surabaya, Indonesia

⁴Nephrology Division, Department of Internal Medicine, Faculty of Medicine, Airlangga University - Universitas Airlangga Hospital, Surabaya, Indonesia

Abstract

Background

Recent researches have established strong association between preeclampsia and end-stage renal disease (ESRD) in later life, however, the point where renal complications commonly begin after post-partum period is not clearly known. Early identification of abnormal kidney parameter in formerly preeclamptic women may potentially halt disease progression and prevent future irreversible damage. This study was conducted to evaluate factors associated with persistent renal endothelial damage reflected as proteinuria 3 months after delivery.

Methods

This was a hospital-based matched case-control study conducted in Dr. Soetomo and Universitas Airlangga Hospital, Surabaya, Indonesia, between January to October 2021 involving 64 women with preeclampsia. The case-group included women with proteinuria 3 months post-partum (26 subjects) while control-group included those without proteinuria (38 subjects). Potential risk factors for persisting proteinuria were assessed through interview and medical record review. Odds ratio (OR) and their corresponding 95% confidence intervals (CI) were calculated.

Results

Systolic blood pressure (SBP) obtained at diagnosis of preeclampsia was the only significant risk factor for persistent proteinuria 3 months after delivery found in this study ($p=0.032$). The women in the case and control group had a mean SBP of 168.27 ± 17.45 mmHg and 155.34 ± 13.86 mmHg respectively. From the Receiver Operating Characteristic (ROC) analysis, we discovered cut off point in 169 mmHg (OR 6.6; 95% CI = 1.96-22.24) with the value of area under the curves (AUC) 0.719.

Conclusion

This study showed that elevated SBP is a significant risk factor for persisting proteinuria 3 months after delivery in preeclampsia patients. Recognizing this risk factor helps us in prioritizing patients who may benefit from tighter monitoring in post-partum period.

Keywords

Hypertension, Preeclampsia, Proteinuria, Systolic Blood Pressure.

MP004

Newly-Diagnosed Hypertension during Admission for COVID-19 Care and Its Subsequent Effect on Outcome of Treatment: A Prospective Cohort Study

M.A. Sholehuddin^{1,3}, M.A.R Firmansya¹, N.H.R Ilahi¹, K. Wahyuni¹, Kurniati^{2,3}, A. Lutfiyah², W.K. Ilahi^{2,3}

¹Gelora Joko Samudro Centre for COVID-19 Care; Gresik; Indonesia.

²Committe for Health Services; Gresik Regencies Public Health Office; Gresik; Indonesia. ³Ibnu Sina General Hospital; Gresik; Indonesia

Background

Recent evidences shown that majority of hypertension case in Indonesia were unrecognized, undiagnosed, and left untreated. Hypertension is among the most prevalent comorbidity of COVID-19 infection and being associated with poor outcome following standard treatment. This study aimed to describe newly-diagnosed hypertension among COVID-19 subject and its outcome following treatment.

Material & Methods

This cohort study enroll subject admitted to Gelora Joko Samudro Centre for COVID-19 Care, confirmed by Nucleic Acid Amplification Test (NAAT) for COVID-19, with no or mild symptom. Newly-diagnosed hypertension was confirmed by manual blood pressure examination as required by JNC VII criteria for hypertension, without previous history of hypertension. Non-hypertensive COVID-19 subject was enrolled as paired control group.

Results

Among 62 subjects admitted with hypertension as presenting comorbidities, 20 subjects (32.26%) were newly-diagnosed. They were predominantly male, with average age of 47.2 ± 9.65 years old. Newly-diagnosed hypertension group has significant longer day of admission ($p < 0.001$) compared to the control group (Mean difference 5.5 95%CI 2.48-8.41). Newly-diagnosed hypertension group also has significant duration of viral shedding ($p < 0.001$) compared to the control group (Mean difference 6.6 95%CI 3.68-9.52). At the end of treatment the newly-diagnosed hypertension group has significant reduced proportion of subject achieving negative conversion ($p < 0.002$) compared to the control group (HR 0.3, 95%CI 0.12-0.63).

Conclusion

Newly-diagnosed hypertension were quite prevalent in COVID-19 care, and had been associated with longer day of admission, longer duration of viral shedding and lower rate of negative conversion at the end of treatment compared with control group.

Keyword

Newly-diagnosed Hypertension, COVID-19, Outcome.

MP005

CAROTID ARTERY ULTRASOUND PROFILE AND COGNITIVE IMPAIRMENT IN CORONARY ARTERY DISEASE

Rizqi Amanda Nabilah^{1*}, Taufik Mesiano¹, Yetty Ramli¹, Rakhmad Hidayat¹, Mohammad Kurniawan¹, Al Rasyid¹, Salim Harris¹

¹ Department of Neurology, Faculty of Medicine Universitas Indonesia - Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia.

**Presenting author*

Correspondence mail:

Department of Neurology, Faculty of Medicine Universitas Indonesia - Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia. Jl. Salemba Raya no. 6 Jakarta 10430, Indonesia. email: ranabilah.md@gmail.com

Abstract

Background

Coronary artery disease is a common cardiovascular disease caused by atherosclerotic plaque accumulation in epicardial arteries. Atherosclerotic plaque, along with hypoperfusion and oxidative stress may cause cerebral dysfunction that leads to cognitive impairment. This study will further assess the correlation between cardiac function, carotid artery profile, and thus their impact on cognitive impairment.

Methods

A cross-sectional study was conducted at Dr. Cipto Mangunkusumo Hospital, Jakarta between January 2020-June 2021. Inclusion criteria were coronary artery disease; exclusion criteria were history of stroke, brain injury, tumour, or infection. All subjects underwent carotid/transcranial doppler ultrasound and cognitive function examination (MOCA-Ina and MMSE) by certified neurologists. Normal ejection fraction defined as LVEF $\geq 55\%$, normal MOCA-Ina as score 26 and above, and normal MMSE as score 25 and above.

Results

Twenty-nine subjects were enrolled in this study. Twenty-four (82.75%) subjects suffered from cognitive impairment where 19 (65.5%) subjects have abnormal MOCA-I/a or MMSE or both and 5 subjects (17.2%) subjects have abnormalities in at least one cognitive function domain. Memory function was the most common domain affected (79.17%), followed by executive function (58.3%), visuospatial (29.17%), attention (8.3%) and language (8.3%). However, the carotid artery ultrasound profile was within normal limits.

Conclusion

Cognitive impairment is common disabling comorbidity found in coronary artery disease with memory function as the most frequent domain affected; although carotid artery profile was normal. Therefore, patients with coronary artery disease should be advised to undergo cognitive function screening and carotid ultrasound, especially those with lower ejection fractions.

Keywords

carotid artery, cognitive impairment, coronary artery disease.

Hypertension and Mortality Predictor within 10 Days among End-Stage Renal Disease with Covid-19 Infection

Langgeng Perdhana¹, Shofa Chasani^{1,2,3}, Muchlis Achsan Udji Sofro^{2,31}

¹ Hemodialysis Unit, Roemani Muhammadiyah Hospital Semarang

² Department of Internal Medicine, Roemani Muhammadiyah Hospital Semarang; ³ Department of Internal Medicine, Medical Faculty of Diponegoro University. Semarang

Corresponding Author :

Langgeng Perdhana

Hemodialysis Unit, Roemani Muhammadiyah Hospital, Semarang, Indonesia Jl. Wonodri Baru Raya No. 22, Semarang 50242, Indonesia

Tel : +6224-84444623; Fax : +6224-8415752

Email : langgeng.p@gmail.com

Background

Hypertension is a common condition found in hemodialysis patients. Hypertension increases the risk of cardiocerebrovascular events among patients with End-Stage Renal Disease (ESRD). On another hand, ESRD plays a role as a predictor factor of severe Covid-19 infection. The mortality rate among hemodialysis patients is higher than in the general population. There are limited studies that determine the role of hypertension as a predictor factor of mortality among ESRD patients with Covid-19 infection.

Objective

To determine the role of hypertension as a predictor factor of mortality within 10 days among ESRD patients with Covid-19 infection

Method

A cohort study was conducted from June 2020 to August 2021 at Roemani Muhammadiyah Hospital Semarang. The inclusion criteria were patients with ESRD, confirmed Covid-19, and treated in Covid-19 isolation ward of Roemani Muhammadiyah Semarang. Meanwhile, patients with incomplete data, and transferred to other hemodialysis units were excluded from this study. Collected data was then analyzed using Kaplan Meier and Cox Regression.

Result

The prevalence of hypertension in this study is 88,2%. From Kaplan Meier analysis, survival within 10 days hypertension group is lower than non-hypertension group (61,2% VS 77,8%; p-value = 0,302). While, Cox Regression analysis showed that hypertension did not play a role as a predictor factor of mortality within 10 days among ESRD patients with Covid-19 infection ($p=0,362$, Hazard ratio= 2,058).

Conclusion

Hypertension did not play a role as a predictor factor of mortality within 10 days among ESRD patients with Covid-19 infection. Further research is needed.

Keywords

Blood Pressure, Chronic Kidney Disease, Hemodialysis, SARS-COV-2.

MP024

Angiotensin-Converting Enzyme Inhibitors/Angiotensin Receptor Blocker Improves Clinical Outcomes in COVID-19 Patients: A Meta-Analysis

[Bayushi Eka Putra](#)¹, [Bambang Widyanoro](#)¹, [Rido Maulana](#)¹, [Agnes Dinar Putrinarita](#)¹, [Bhayu Hanggadhi Nugroho](#)¹, [Anwar Santoso](#)¹

Department of Cardiology and Vascular Medicine Faculty of Medicine Universitas Indonesia National Cardiovascular Centre Harapan Kita Jakarta, Indonesia

Abstract

Objective

It is speculated that patients with pre-existing use of ACEi/ARB increase the infection risk and severity of COVID-19 pneumonia. Otherwise, the contrasting hypothesis stated that the use of ACEi/ARB might protect against virally induced lung and cardiac injury. We aimed to investigate association between pre-existing use of ACEi/ARB with the severity and mortality in patients with COVID-19 pneumonia.

Methods

We performed a comprehensive literature search from several databases in concordance to PRISMA algorithm. The population was COVID-19 pneumonia. Mortality was defined as in-hospital mortality; the severity of disease was categorized as severe versus non-severe based on the guidelines issued by National Health Commission of China on Diagnosis and Treatment of COVID-19. Population with pre-existing use of ACEi/ARB and without the use of ACEi/ARB were compared. The primary outcome was mortality, and the secondary outcomes were combined endpoint of mortality and severity.

Results

A total of 2,496 patients recruited from 8 eligible studies. This meta-analysis demonstrated that pre-existing use of ACEi/ARB is associated with a lower mortality (RR = 0.81, 95%CI 0.67 to 0.98, $p = 0.03$, $I^2 = 0\%$). There was no association solely with severity of disease. The use of ACEi/ARB is also associated with the combined endpoint of mortality and severity (RR = 0.87, 95%CI 0.76 to 0.99, $p = 0.04$, $I^2 = 32\%$).

Conclusion

The pre-existing use of ACEi or ARB is associated with lower mortality and the combined endpoint of severity and mortality in patients with COVID-19.

Keywords

angiotensin converting enzyme inhibitor, angiotensin receptor blocker, covid-19 pneumonia.

MODERATED POSTER 2 SCHEDULE

MP Number	Title	Institution	Presenter
MP007	Hyperuricemia And Risk of Hypertension Resistant to Therapy: A Systematic Review and Meta-Analysis	Cardiology Resident, Department of Cardiology and Vascular Medicine, Gadjah Mada University, D.I. Yogyakarta, Indonesia	Zakka Zayd Zhullatullah Jayadisastra
MP008	Effect of High-Dose Vitamin D on Hypertension: A Systematic Review and Meta-Analysis of Randomized Controlled Trials	Faculty of Medicine, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia	Reynaldo Halomoan
MP009	Association between Vitamin D Receptor Gene Polymorphism and Essential Hypertension: A Systematic Review and Meta-analysis	National Cardiovascular Center Harapan Kita, Jakarta, Indonesia	Muhamad Fajri Addai
MP010	EARLY DETECTION OF LEFT ATRIAL STRAIN ABNORMALITIES BY SPECKLE TRACKING IN HYPERTENSION	Department of Cardiology and Vascular Medicine, Universitas Andalas / DRM. Djamil Hospital, Padang.	Anak Agung Oka Shindu Phalguna
MP011	qw	Department of Internal Medicine, Faculty of Medicine, Universitas Sumatera Utara, Medan, Indonesia	Mutia Chairani

MP Number	Title	Institution	Presenter
MP012	Role of Neuropeptide Y Gen RS 16147 Polimorfism as A Risk Factor for Hypertension	Faculty of medicine, North Sumatera University	dr. Yesanopa Sianturi
MP013	Endothelin-1 Level in Hypertensive Subjects between Coronary Artery Disease and Healthy Populations	1. Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada - Dr. Sardjito Hospital	Mutiaira Putri

Hyperuricemia And Risk of Hypertension Resistant to Therapy: A Systematic Review and Meta-Analysis

[Z. Z. J. Jayadisastra](#)¹, [I. K. Kurniawan](#)², [N. Purnomo](#)³

¹*Cardiology Resident, Department of Cardiology and Vascular Medicine, Gadjah Mada University, D.I. Yogyakarta, Indonesia*

²*General Practitioner at Dr. Oen Solo Baru Hospital, Surakarta, Indonesia*

³*General Practitioner at Siloam Hospital TB Simatupang, DKI Jakarta, Indonesia*

Background

Hypertension is a common public health problem throughout the world. One of the most common risk factors of hypertension is hyperuricemia. However, there are limited data for the effect of hyperuricemia in hypertension undergoing therapy. The objective of this study is to discover the relationship between hyperuricemia and the risk for resistant hypertension.

Methods

Systematic literature search was conducted based on the PRISMA flow diagram, from PubMed, PubMed Central, Cochrane, and Google Scholar with keywords: "hyperuricemia", "uncontrolled hypertension", "resistant hypertension", and "hypertension". Data extraction was done and Newcastle-Ottawa Scale was used to assess the study quality. The data was then analyzed using Revman 5.4.1 (Cochrane).

Results

Four selected cohort studies with a total of 8247 patients. All of the included studies have good quality. From the data analysis, we found that hyperuricemia increased the odds of hypertension becoming resistant to therapy (OR: 2.29 [95% CI 1.26, 4.14]; p: 0.006). Forest plot showed the data was evenly distributed.

Conclusion

Hyperuricemia increases the risk of hypertension being resistant to therapy. Therefore, uric acid levels should be controlled in hypertensive patients to optimize the effect of hypertension therapy.

Keywords

resistant hypertension, uncontrolled hypertension, hyperuricemia

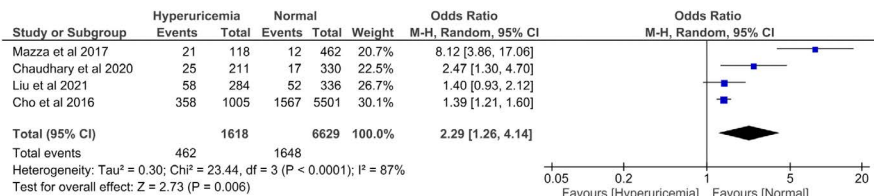


Figure 1. Forest plot of meta-analysis between hyperuricemia and the risk of resistant hypertension.

MP008

Effect of High-Dose Vitamin D on Hypertension: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

R Halomoan¹

¹General Practitioner, Faculty of Medicine, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia

Background

Vitamin D deficiency has been strongly linked with the risk of developing hypertension. However, the results of previous studies are still unclear whether standard vitamin D supplementation has beneficial role in reducing blood pressure in patients with hypertension. This study aims to determine the effect of high dose vitamin D supplementation in lowering blood pressure in hypertensive patient compared to placebo.

Method

Systematic literatures search was conducted through online databases including PubMed and the Cochrane Library to find relevant randomized controlled trials (RCTs) from inception to December 2021. Fixed-effect model was used to pool the weighted mean difference (WMD) of blood pressure across studies. Confidence Interval (CI) of 95% were reported. I² test was used

to assess the heterogeneity across studies. Meta-analysis was performed using RevMan 5.3.

Result

Four RCTs involving 1100 participants were included. On pooled analysis, high dose vitamin D supplementation did not show significant reduction in systolic blood pressure compared to placebo (WMD, 0.37; 95% CI, - 1.34 to 2.09; $p=0.67$; $I^2=39\%$). Similar finding was also found in the association of high dose vitamin D supplementation and diastolic blood pressure (WMD, 0.32; 95% CI, - 0.80 to 1.45; $p=0.57$; $I^2=42\%$).

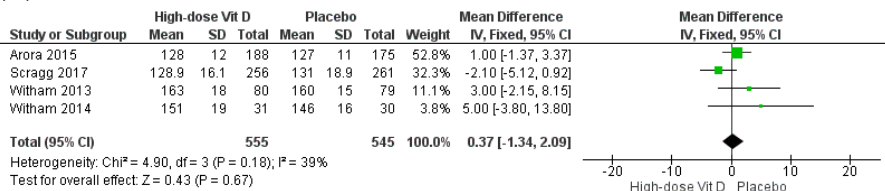
Conclusion

High dose vitamin D supplementation does not lower systolic and diastolic blood pressure in hypertensive patients

Keyword

blood pressure, high dose vitamin D supplementation, hypertension

(A)



(B)

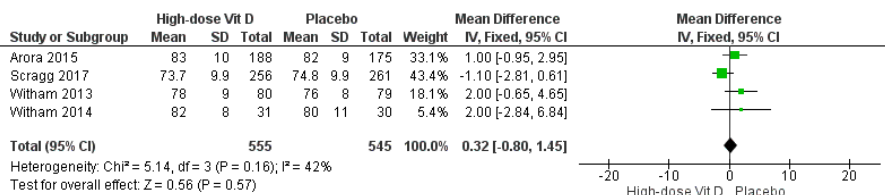


Figure 1. Forest plot of meta-analysis between high-dose vitamin D and placebo in: (A). Systolic blood pressure; (B). Diastolic blood pressure.

Association between Vitamin D Receptor Gene Polymorphism and Essential Hypertension: A Systematic Review and Meta-analysis

[M.Fajri Adda'i¹](#), [R. Maulana¹](#), [B. Widyantoro¹](#)

¹National Cardiovascular Center Harapan Kita, Jakarta, Indonesia

Background and aim

Recent publications reported that the association between Vitamin D Receptor (VDR) gene polymorphism of FokI (rs228570 or rs10735810) and essential hypertension (EH) remains controversial. Thus, we conducted this study to investigate the relationship between FokI and EH.

Methods

Major medical databases (EMBASE, PUBMED, Science Direct, Cochrane, Springer, Scopus, ProQuest, and Lilacs) were systematically searched for observational studies evaluating the impact of FokI polymorphism on EH, published until January 2022 with predefined protocol and without language restriction regarding PRISMA guideline. Analysis was performed in RevMan 5.3 (fixed and random-effects model through heterogeneity test) to provide pooled measures for odds ratio (OR) under Hardy-Weinberg Equilibrium based-on allele contrast, additive, dominant, and recessive genetic models.

Results

Eight observational studies enrolled comprising 3,762 cases and 4,445 controls. Under the allele model, FokI polymorphism (f vs F) significantly increased the odds of having EH (OR=1.27; 95% confidence interval: 1.05-1.53). FokI polymorphism was not significantly associated with EH under additive model (ff vs FF) with OR=0.94 (0.57-1.54), dominant model (Ff + ff vs FF) with OR=0.97 (0.8 - 1.16), and recessive model (FF + Ff vs ff) with OR=0.96 (0.59 - 1.56). However, subgroup analysis based on ethnicities, comprising Asian, European, American, and African, showed that only in African population, FokI polymorphism was associated with reduced odds of EH under additive (OR=0.36; 0.17 - 0.74) and recessive model (OR=0.31; 0.14 - 0.7).

Conclusions

VDR gene polymorphism of FokI was significantly associated with EH in a

particular genetic model and could be affected by ethnicity. However, further studies are needed to make the robust evidence.

MP010

Early Detection of Left Atrial Strain Abnormalities by Speckle Tracking in Hypertension

Phalguna S¹, Yaqzhan I¹, Firmansyah A¹, Nani², Yanni M²

¹Resident of Cardiology Training, Department of Cardiology and Vascular Medicine, Universitas Andalas

²Staff at Department of Cardiology and Vascular Medicine, Universitas Andalas / DRM. Djamil Hospital, Padang.

Abstract

Background

Arterial hypertension is associated with morphologic and functional left atrial (LA) abnormalities. An increase in LA size in patients with hypertension may suggest early sign of LV diastolic impairment leading to heart failure. Peak Atrial Longitudinal Strain (PALS) is a new echocardiographic method reflecting LA reservoir function. This method is particularly useful when changes are subtle and not easily determined by traditional parameters, as it is in arterial hypertension.

Objective

The aim of this study was to evaluate PALS using 2D strain in patients with and without hypertension as an indicator for early diastolic LV impairment.

Methods

60 patients with normal Ejection Fraction (30 patients as control group vs 30 hypertensive patients) underwent echocardiography examination. Peak Atrial Longitudinal Strain was measured using speckle tracking 2D echocardiography. Mean PALS between both groups was analysed statistically.

Result

Of 60 patients, 56,7% were male and 43,3% were female. There were no statistically difference in mean age, body mass index and history of diabetes between control and hypertensive group (58 years vs 54 years, $p = 0,300$; 24,5

vs 22,5 p= 0,061, 1,9 % vs 1,8%, p=0,398, respectively). Echocardiography examination showed LA diameter and LA volume index were higher in hypertensive group (31,47 vs 28,43 mm, p=0,090; 24,04 ml/m² vs 18,03 ml/m², p= 0,100, respectively). There was no diastolic dysfunction found in both group. Comparison between PALS in hypertensive group and control group showed significant result statistically (25,05% vs 46,36%, p=0,001) with lower value in hypertensive group.

Conclusion

Patients with arterial hypertension have decreased PALS reflecting abnormality of reservoir LA function even in the absence of echocardiographic signs of LV diastolic dysfunction. PALS may be considered as a promising tool for the early diastolic LV impairment in hypertension.

Keyword

Peak Atrial Longitudinal Strain, Hypertension

MP011

The Role of Hypertension as a Risk Factor for Acute Kidney Injury in COVID-19 at RSUP Haji Adam Malik Medan: A Cross-Sectional Study in 2020

[Mutia Chairani¹](#), [Annisa Nidya Rahmatika Sitepu¹](#), [Riri Andri Muzasti²](#)

¹*Department of Internal Medicine, Faculty of Medicine, Universitas Sumatera Utara, Medan, Indonesia*

²*Division of Nephrology and Hypertension, Department of Internal Medicine, Faculty of Medicine, Universitas Sumatera Utara, Medan, Indonesia*

Background and aim

Acute kidney injury (AKI) is a common complication in hospitalized patients. The incidence of AKI in COVID-19 ranges from 0.5% to 56.9% in various case series. AKI in COVID-19 is also associated with a higher risk of death. Some risk factors reported to confer a poor prognosis in COVID-19 such as increased age, male gender, patients with comorbidities such as hypertension or diabetes and higher BMI. The aim of this study was to identify the prevalence and risk factor of AKI among COVID-19 patients.

Material and methods

We conducted a cross sectional analysis from moderate, severe, and critical COVID-19 patients that developed to AKI at RSUP Haji Adam Malik Medan during 2020. The data was collected during July to September 2021.

Results

From 465 hospitalized COVID-19 patients, there were 64 people with inclusion and exclusion criteria suffered from AKI during the COVID-19 treatment period (13.8%). 71.9% of the patients were men, 70.3% had more than 1 comorbidities, and 60.9% had hypertension as comorbid. Among patients with comorbid hypertension, 12 patients had stage 1 AKI (30.8%), 2 patients had stage 2 AKI (5.1%), and 25 had stage 3 AKI (64.1%). Although bivariate analysis showed no significant relationship between hypertension and AKI stadium (p 0.155), multivariate analyses showed that hypertension has an OR of 4.24 (p 0.049; CI 95% 1.01 - 17.9) which means that in patients with hypertension, the incidence rate for stage 3 AKI is 4.24 times greater and statistically significant.

Conclusion

Hypertension is proven as a risk factor of AKI in COVID-19 patients.

Keywords

Acute Kidney Injury, COVID-19, hypertension, risk factors.

MP012

Role of Neuropeptide Y Gen RS 16147 Polimorfism as A Risk Factor for Hypertension

Yesanopa Sianturi^{1*}, Gabriel Pardamean², Riri Andri Muzasti³

^{1,2}Department of Internal Medicine, Faculty of Medicine, Universitas Sumatera Utara, Medan, North Sumatera, Indonesia

³Division of Nephrology and Hypertension, Department of Internal Medicine, Faculty of Medicine, Universitas Sumatera Utara, Medan, North Sumatera, Indonesia

*Email : elliorapasaribu@gmail.com

Abstract

Background

According to World Health Organization (WHO), hypertension has been a medical problem that associated with 7.5 millions (12.8 percents) death in wide world. Neuropeptide Y (NPY) is the most often found neurotransmitter in nervous system, comes from expression of NPY gen rs16147, has effect in symphatic tonus enhancement result in increasing blood pressure (BP).

Objective

To determine role of NPY Gen RS 16147 Polimorfism as a risk factor of hypertension.

Method

Analytic study with case control design to determine relationship between NPY Gen RS 16147 Polimorfism : C-399T and BP with Chi Square test. Population consist of 100 sample (50 male, 50 female) with consecutive sampling. Sample taken from venous blood, analyzed using Polymerase Chain Reaction Restriction Fragment Length Polymorphism (PCR-RFLP) method. p value <0,05 means statistically significant.

Result

Study enrolled subject with median age 51,5 (22-83) years (26 normotension, 74 hypertension), subject with alel "C" NPY RS 16147 genotype has abnormal BP, while subject with non alel "C" NPY RS 16147 (TT genotype) has both normal and abnormal BP, (p: 0.017).

Average systolic blood pressure (SBP) in non alel "C" NPY RS 16147 genotype is $139,05 \pm 21,42$ mmHg, while average SBP in alel "C" genotype NPY RS 16147 genotype is $151,32 \pm 22,26$ mmHg.

Conclusion

Neuropeptide Y Gen RS 16147 polimorfism is a risk factor for hypertension. The presence of alel "C" in NPY RS16147 related to high BP significantly.

Key Words

Hypertension, Neuropeptide Y (NPY) Gen RS 16147, Risk Factor.

MP013

Endothelin-1 Level in Hypertensive Subjects between Coronary Artery Disease and Healthy Populations

[Mutiaru Putri¹](#), [Anggoro Budi Hartopo¹](#), [Maria Patricia Inggriani¹](#), [Jajah Fachiroh²](#), [Fatwa Sari Tetra Dewi³](#)

¹*Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada - Dr. Sardjito Hospital, 55281 Yogyakarta, Indonesia.*

²*Department of Histology and Cell Biology, Faculty of Medicine, Public Health and Nursing - Biobank Development Team, Universitas Gadjah Mada, 55281 Yogyakarta, Indonesia.*

³*Department of Health Behavior, Environment and Social Medicine, Faculty of Medicine, Public Health and Nursing-Sleman Health and Demographic Surveillance System, Universitas Gadjah Mada, 55281 Yogyakarta, Indonesia.*

Background

Hypertension is known as independent factor in correlation with coronary artery disease (CAD) and play important part in atherosclerotic process. In an animal model with hypertension which endothelin-1 play as a vasoconstrictor, there was overexpression of endothelin-1 in the vessel walls. This overexpression suggests a role of endothelin-1 in hypertension patient, especially among CAD.

Material and methods

This was a cross-sectional study. A total 226 subjects were analysed, consisted

of 127 subjects with CAD and 99 healthy population. The CAD subjects were patients underwent elective coronary angiography with significant CAD lesion. The healthy population were respondents of Sleman-HDSS survey (year 2019). Hypertensive subjects were defined those with history of hypertension from anamnesis. Diabetic subjects were excluded. The endothelin-1 was measured from peripheral serum samples by ELISA method. The comparative analysis was performed with Mann-Whitney test and the correlation was performed with Spearman correlation test.

Results

Mean serum endothelin-1 level was 2.1 ± 1.2 pg/mL in hipertensive and 2.6 ± 1.6 pg/mL in normotensive ($p=0.063$) among CAD subjects. Among healthy population, mean serum endothelin-1 level was 1.7 ± 0.7 pg/mL in hipertensive and 1.8 ± 0.8 pg/mL in normotensive, ($p=0.675$). In addition, Spearman correlation between serum endothelin-1 and systolic blood pressure showed correlation coefficient -0.045 ($p = 0.543$) in CAD subjects and -0.165 ($p=0.069$) in healthy population which indicated inverse correlation between those parameters in both populations.

Conclusion

Serum endothelin-1 level did not differ significantly based on hipertensive status both in CAD and healthy population. There was a tendency toward decreased serum endothelin-1 level in hipertensive subjects.

Keywords

Endothelin-1, hipertension, coronary artery disease.

MODERATED POSTER 3 SCHEDULE

MP Number	Title	Institution	Presenter
MP014	Epistaxis as Manifestation of Chronic Kidney Disease in Pre-existing Hypertensive Pregnant Woman: A Case Report	Cipto Mangunkusumo Hospital	Dimas Septiar
MP015	Hypertensive Emergency with Loss of Consciousness: A Challenge in A Resource-limited Facility	RSU Raffa Majenang	Vita Arfiana Nurul Fatimah
MP016	A 27-YEAR-OLD FEMALE WITH SECONDARY HYPERTENSION DUE TO LARGE VESSELS ARTERITIS: A CASE REPORT	1 Department of Internal Medicine, School of Medicine and Health Sciences, Atma Jaya Catholic University of Indonesia	
MP017	Dynamic ST-Segment Changes Mimicking Acute Myocardial Infarction in Patient with Right Sided Tension Pneumothorax: Case Report	RS Dr Doris Sylvanus Palangkaraya	Adrian Reynaldo Sudirman
MP018	Hypertension & Transient Ischemic Stroke in Adolescent	Siloam Hospital Lippo Village	Riyandi Ardi Putra Fernandes

Hypertension Management in Pregnant Woman with Chronic Kidney Disease: A Case Report

[Dimas Septiar*](#), [Dwi Suseno*](#), [Ni Made Hustrini*](#)

**Nephrology Division, Internal Medicine Department, Ciptomangunkusumo Hospital, Jakarta, Indonesia*

Background

Hypertension is associated with maternal and fetal morbidity.¹ The risk of adverse pregnancy outcomes is increased in women with chronic kidney disease (CKD) including pre-eclampsia, fetal growth restriction, preterm delivery, and accelerated loss of maternal renal function.²

Case Illustration

Female, 25 years old, 17 weeks first gestation, admitted to emergency room (ER) due to high blood pressure. No other significant symptoms. History of hypertension (7 month), not treated. History of declining renal function (creatinine/Cr 1.9 mg/dl), not treated. Normal urine volume (> 1,000 ml/day). The blood pressure was (200/110 mmHg). Pale conjunctiva. No other significant signs. Severe anemia (hemoglobin/Hb 6.26 g/dl), hyperphosphatemia (6.9 mg/dl), declining in renal function (eGFR 4.2 ml/min/1.73 m²) with uremia (228 mg/dl), microhematuria (13-15/hpf), and proteinuria (+2) were found. The fetomaternal ultrasound revealed normal fetal activity and decrement in mother's renal size. The patient received intravenous nifedipine with blood pressure (BP) target 160/90 mmHg (20% decrease in mean arterial pressure/MAP), then stabilized with methyl dopa 250 mg tid and nifedipine 30 mg once daily.² At ward, the BP was stable (130/70 mmHg). Hemodialysis was initiated at ER and continued for 20 hours per week.² During hemodialysis, the blood pressure was in normal range (130-135/70-80 mmHg). At 19 weeks gestational age, the pregnancy was terminated due to fetal demise. The mother continued chronic dialysis.

Discussion

Chronic hypertension in pregnancy has been associated with premature delivery and fetal demise.¹ In this case, the fetal demise supposedly due to the uncontrolled chronic hypertension and also the risk of dialysis during pregnancy. The rate of premature delivery is still higher among dialysis

patients.¹ The emergency hypertension should be treated with intravenous labetalol. Due to the availability, nifedipine was chosen as alternative. The BP target in CKD pregnant women is < 135/85 mmHg (1D).² In this case, the blood pressure target has been achieved. Labetalol, nifedipine, and methyldopa are the recommended antihypertension (1B).² In this case, after the emergency has been treated, the treatment was continued with methyldopa and nifedipine. Methyldopa is associated with better obstetric outcomes.⁴ In pregnant women with CKD needed renal replacement therapy, hemodialysis is the gold standard if the maternal urea is 102-120 mg/dl, with average 23 ± 7 hours per week.³ In this patient, hemodialysis was initiated due to ureum level 228 mg/dl. The blood pressure was controlled during hemodialysis (20 hours per week). In this case, the cause of hypertension and CKD are not clear, and the biopsy wasn't conducted due to the decrement of mother's renal size (chronic condition). In the future, education about controlling blood pressure and hemodialysis play the key role to this patient.

References

1. Hussain A, Karovitch A, Carson MP. Blood pressure goals and treatment in pregnant patients with chronic kidney disease. *Advances in Chronic Kidney Disease*. 2015; 22(2): 165-9.
2. Wiles K, Chappell L, Clark K, Elman L, Hall M, Lightstone L, et.al. Clinical practice guideline on pregnancy and renal disease. *BMC Nephrology*. 2019; 20: 401.
3. Vazquez-Rodriguez JG. Hemodialysis and pregnancy: technical aspects. *Cir Cir*. Jan-Feb 2010; 78(1): 99-102.
4. Salama M, Rezk M, Gaber W, Hamza H, Marawan H, Gamal A, et. al. Methylopa versus nifedipine or no medication for treatment of chronic hypertension during pregnancy: a multicenter randomized clinical trial. *Pregnancy hypertension*. 2019; 17: 54-58.

Hypertensive Emergency with Loss of Consciousness: A Challenge in A Resource-limited Facility

[VAN Fatimah¹](#), [R Sofia¹](#), [IS Permana²](#)

¹General Practitioner, Raffa General Hospital, Cilacap, Indonesia

²Internist, Raffa General Hospital, Cilacap, Indonesia

vita.arfiana@gmail.com

Background

Hypertensive emergency with loss of consciousness may suggest variable conditions. While head CT scan is the gold standard to confirm the diagnosis, scoring and clinical algorithm often have specific role in resource-limited setting. For stroke, the Siriraj Stroke Score (SSS) and Gadjah Mada Stroke Algorithm are widely used. The initial management can be decided after considering possible outcomes.

Case Illustration

A 65-year-old woman was brought to an emergency department of a type-D hospital for being unconscious and snoring. Her blood pressure was 200/110 mmHg (mean arterial pressure/MAP 140 mmHg) with unknown history of hypertension. The Glasgow Coma Scale was E1V2M4. Normal pupil reflex, lateralization to the right side, and Babinski reflex were found in the neurological examination. There were systolic murmur, deficit pulse, and basal rhonchi. Her electrocardiogram showed atrial flutter with variable AV conduction. She was on digoxin for probably arrhythmia condition but the specific information about the history of heart disease could not be retrieved. The SSS was 4 and together with Gadjah Mada Stroke Algorithm they were suggestive of hemorrhagic stroke. As the hospital had no neurologist and head CT scan, the initial management was provided according to the clinical judgement of an internist with guidance of the score and algorithm. The nicardipine drip was started and maintained at 5 mg/hour to attain 10-20% reduction of blood pressure. She was then referred to a type-B hospital with head CT scan facility and it turned out that it was an ischemic stroke.

Conclusion

Management of stroke with hypertensive emergency in a resource-limited setting is challenging. While aggressive reduction of blood pressure

may worsen the brain perfusion in ischemic stroke, it can be beneficial in hemorrhagic stroke. In this case, the history of heart disease with atrial flutter might give a clue to possible ischemic stroke but the clinical presentation was typical for hemorrhagic stroke. Targeting 10-20% blood pressure lowering within 6 hours was considered to be safe.

MP016

A 27-year-old female with secondary hypertension due to large vessels arteritis: A Case Report

Angelina Yuwono¹, Arif Sejati¹

¹Department of Internal Medicine, School of Medicine and Health Sciences, Atma Jaya Catholic University of Indonesia

Background

5-10% of all hypertensive adults may have secondary causes of hypertension.¹ Secondary cause of hypertension should be considered in hypertensive patients whose disease onset is younger than 30 years old and in those who have a history of severe or resistant hypertension and malignant or accelerated hypertension, and overweight.^{2,3} Takayasu arteritis (TA) is a rare disease that causes secondary hypertension.^{4,5}

Objective

To increase the awareness of the secondary cause in people with young-onset hypertension and resistance to treatment.

Method

A case of a 27-years-old woman with a 7-year history of hypertension.

Results

The patient came to the outpatient clinic due to vertigo, which had been worsened in the past three months, accompanied by dyspnea on effort, orthopnea, double vision, and intermittent claudication. She was diagnosed with hypertension 7 years ago on her 1st pregnancy and was treated with Candesartan 16mg QD, Amlodipine 10mg QD, Bisoprolol 5mg QD, and Clonidine 150mcg TID. She has different blood pressure in her right and left arm (130/70mmHg and 150/70mmHg, respectively). She had a different right

and left ankle-brachial pressure index (0,45 and 0,42). She had decreased renal function and left ventricular hypertrophy from her electrocardiograph. Her CT aortography showed type 3 Takayasu Arteritis.

Conclusion

Evaluation of secondary etiology is mandatory in adults who present with younger onset of hypertension and are resistant to treatments. A careful history-taking and physical examination leads to further diagnostic evaluation and reveals the cause of secondary hypertension, such as Takayasu arteritis.

Keyword

hypertension, secondary hypertension, takayasu arteritis, resistant hypertension.

MP017

Dynamic ST-Segment Changes Mimicking Acute Myocardial Infarction in Patient with Right Sided Tension Pneumothorax: Case Report

[AR Sudirman¹](#), [Y Galenta¹](#)

Dr Doris Sylvanus Hospital Palangka Raya, Kalimantan Tengah, Indonesia

Background

ECG findings mimicking acute myocardial infarction (AMI) in right-sided pneumothorax, not only have been reported less but also have been noted to be less pronounced when compared to a left-sided pneumothorax. Hereby we present the case of spontaneous right-sided pneumothorax with ST-segment elevation suggestive of AMI and completely resolved after decompression.

Case Summary

A 62-year-old man presented with sudden onset of dyspnoea and loss of consciousness. His medical history was remarkable for tuberculosis with complete medication 20-years-ago. Upon arrival, her oxygen saturation-38% room-air and BP-213/136. She was in respiratory distress with asymmetrical chest movement and diminished breath sound in right hemithorax. The x-ray revealed right pneumothorax and ECG showing ST-segment elevation in anterior leads with reciprocal changes, reminiscent of AMI. Initial ABG

demonstrated severe respiratory acidosis. Troponin level was unremarkable. Emergency needle decompression and chest tube placement were performed with rapid clinical improvement. The x-ray and ABG evaluation were improved with resolution of ECG changes. Following days, multiple bullae were shown on CT evaluation. He was scheduled for bullectomy. His post-operative condition improved and was discharged for outpatient control.

Discussion

The possible mechanism of brief ECG changes has been mainly attributed to build-up of intrapleural air, which can shift the cardiac silhouette and exert pressure on the heart and coronary vessels precipitating ischemia. Furthermore, the venous return and coronary flow reserve decreased due to the increase of intrathoracic pressure. This condition will adding to ischemia due to decrease cardiac-output and elevated myocardial oxygen demand. All this mechanism are reversed with the resolution of pneumothorax.

Conclusion

The importance on diagnosing ST-segment elevation should be scrutinized in relation to the clinical presentation and not as a diagnostic indicator of myocardial infarction on its own.

Keywords

Pneumothorax, ST-segment changes.

MP018

Hypertension & Transient Ischemic Stroke in Adolescent

[R Fernandes¹](#), [AA Lukito²](#), [S Chandra³](#), [H Hutabarat⁴](#)

Department of Cardiology Faculty of Medicine Pelita Harapan University, Siloam Hospital Lippo Village, Tangerang, Indonesia

Introduction

Adolescent hypertension is increasing continuously over the years. This rapid rise of number is a concern which leads to more cerebrovascular diseases, cardiovascular disease and CKD ultimately. Lifestyle issues trigger the escalation of its incidence.

Case Description

A 23 years-old man, hypertensive, sedentary lifestyle, obesity with history of dyslipidaemia and smoking presented to our ED with sudden right-sided extremity weakness and dysarthria after waking up, lasted less than 24-hours. Physical examination revealed BP 120/60 mmHg, HR 78 bpm. ECG showed sinus rhythm, LAE and LVH. Laboratory showed LDL-C 129 mg/dL. Brain MRA-MRI were within normal limit. Diagnosis of TIA was confirmed. Echocardiography revealed LAE, concentric LVH, normal LVEF without any thrombus seen. Serial examinations revealed normal level of protein C & S, few isolated PAC, and 1 episode of PAC runs on the Holter-ECG. Edoxaban and Amlodipine were prescribed, lifestyle modification was recommended.

Discussions

Adolescent hypertension cases directly proportional to the increment of the vascular risk factors (smoking, dyslipidaemia, diabetes and obesity). These circumstances eventually lead to further serious event such as ischemic stroke. Although adolescent ischemic stroke is considered as a rare occurrence, its incidence, morbidity and mortality continue to increase which characterized by cardioembolic origin, with some cases of unknown aetiologies. LA enlargement itself, even without AF recorded is a potential source of embolic event due to blood stasis.

Conclusions

As a strong predictor of worse outcome in adolescent with hypertension, LAE should be more highlighted by clinician. Multiple thorough investigation for hypertension in adolescent is needed.

Keywords

Hypertension, Transient Ischemic Stroke, Left Atrium Enlargement.

MODERATED POSTER 4 SCHEDULE

MP Number	Title	Institution	Presenter
MP019	RENAL ARTERY STENOSIS IN A SINGLE FUNCTIONING KIDNEY WITH CORONARY ARTERY DISEASE: BLOOD PRESSURE AND ANGINA CONTROL BY RENAL STENTING	National Cardiovascular Centre Harapan kita	Bayushi Eka Putra
MP020	Hypertension in Young Adult Women with Ovarian Fibrothecoma: A Case Report	Siloam Hospital Lippo Village	Sonia Chandra
MP021	Deep Breathing Reduces Blood Pressure in Healthy Normotensive Young Adult Subjects	Department of Internal Medicine, Faculty of Medicine, Hasanuddin University	Achmad Fikry
MP022	Controlling Hypertension in Breastfeeding Woman: A Case Report	Cipto Mangunkusumo Hospital	Bramantya Wicaksana

MP019

Renal Artery Stenosis in a Single Functioning Kidney with Coronary artery Disease: Blood Pressure and Angina control by Renal Stenting

B.E Putra, S. Adiarto, Bayushi Eka Putra, S. Indriani, T. Siddiq, H. Andriantoro, I. Dakota, I. Sunu

Department of Cardiology and Vascular Medicine, National Cardiovascular Centre Harapan Kita, Faculty of Medicine Universitas Indonesia, Jakarta, Indonesia

Background

Angioplasty and stenting are now considered as an accepted method of treating stenotic or occluded vessels in almost all parts of the human body. The indication is expanding and many lesions with anatomy that were previously considered inappropriate can now be safely and effectively treated with angioplasty and stenting. The condition however, is somewhat different in renal artery stenosis. Several randomized trials have shown that angioplasty and stenting are not effective in either lowering blood pressure or preserving renal function.[2,3] Thus, the indication of this procedure decreases markedly, and only a few are still considered as valid indications of renal stenting.

Case Illustration

A 66 year old female with chest pain and refractory hypertension were found to suffer from coronary artery disease and renal artery stenosis of a single functioning kidney. Medical treatments which include multiple antihypertensive drugs failed to control blood pressure and chest pain. Accordingly renal stenting was successfully performed and following the procedure blood pressure decreased significantly while the chest pain completely disappeared.

Conclusion

While routine stenting is no longer recommended for renal artery stenoses, a careful look at a patient's clinical condition would be helpful in selecting which patient would still benefit from the procedure

Keyword

Refractory hypertension, bilateral renal artery stenosis, solitary functioning kidney, renal artery stenting.

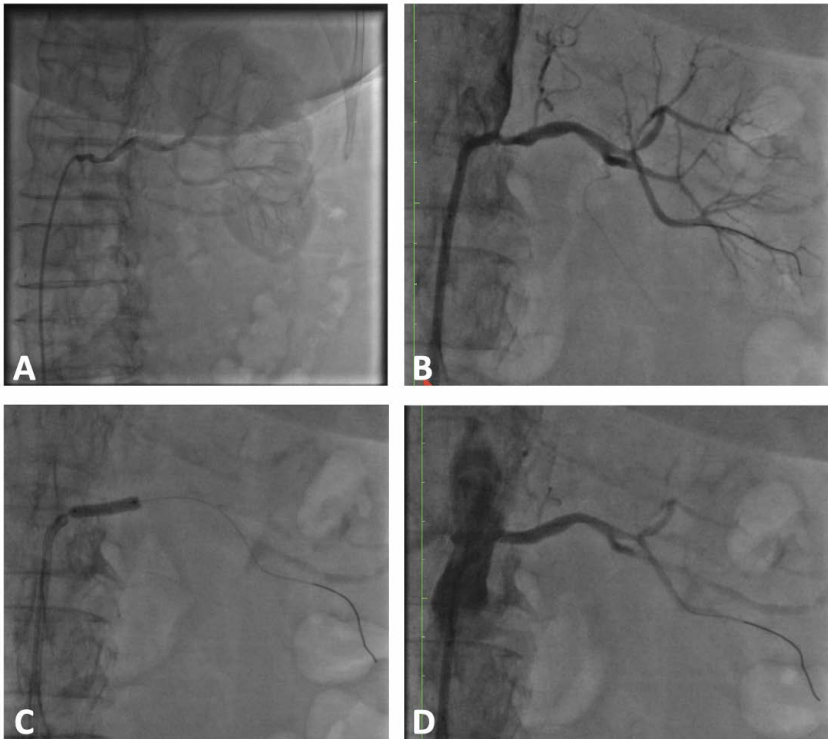


Figure 1. A: Renal left main arteriography before ballooning; **B:** Renal left main arteriography after ballooning; **C:** Deploying stent in renal left main artery; **D:** Renal left main arteriography after stenting.

MP020

Hypertension in Young Adult Women with Ovarian Fibrothecoma: A Case Report

[S. Chandra](#), [A.A. Lukito](#), [H. Hutabarat](#), [R.A.P. Fernandes](#)

Siloam Hospital Lippo Village, Tangerang, Indonesia.

Correspondence: soniachandra@hotmail.com

Abstract

Hypertension among young people is common, affecting 1 in 8 adults aged between 20 and 40 years. Parental high BP gives 3x higher risk of hypertension in adolescents. Differential diagnoses of hypertension in young adults are most likely secondary hypertension.

A 27 years old women, presented with headache, nausea vomitus, and her blood pressure 203/103 mmHg. Family history both parents had hypertension. Her menstrual cycle within normal, but there was dysmenorrhea since 1 year. At physical examination, her blood pressure 180/110 mmHg, on ECG report sinus rhythm and LVH. Normal valves, concentric left ventricle hypertrophy, global normokinetic were confirmed on her echocardiography. Patient were refer to obstetrician and the result of ultrasound was bilateral neoplasm ovarian fibroid. Level CA-125 was high and MRI pelvic result was suggestive ovarian fibrothecoma.

Secondary hypertension should be considered in the presence of suggestive sign and symptoms such as severe or resistant hypertension, onset before 30 years of age (especially before puberty), malignant or accelerated hypertension and an acute rise in blood pressure. In young women, renal artery stenosis caused by fibromuscular dysplasia is one of the most common causes of secondary hypertension. Other common causes are thyroid dysfunction, ovarian problems, hyperaldosteronism, and drugs. In this case, ovarian fibrothecoma is a benign sex cord-stromal tumor that some hormonally active and show estrogenic activity such as menstrual irregularities, endometrial dysplasia and can make higher chance of hypertension. Lesson learnt from this case, discovering the underlying cause of secondary hypertension should be age- and gender- based approach.

Keywords

hypertension, young adult, ovarian fibrothecoma.

Reference

1. Wenger NK, Arnold A, Bairey Merz CN, et al. Hypertension Across a Woman's Life Cycle. *J Am Coll Cardiol*. 2018;71(16):1797-1813. doi:10.1016/j.jacc.2018.02.033
2. Thomas CH, Zoe HA, Richard PB, et al. Investigation and Treatment of High Blood Pressure in Young People: "Too Much Medicine or Appropriate Risk Reduction?" AHA Hypertension Volume 75, issue 1, Jan 2020;75:16-22. <http://doi.org/10.1161/HYPERTENSIONAHA.119.13820>
3. Debbie LC, Raymond RT. Approach to the Young Patient with New-Onset Hypertension. *CJASN*; Jun 2018, 13(6) 929-932. doi: 10.2215/CJN.13341217
4. Alampady KPS, Divya KPS, Srinivasa RP, et al. Clinical Syndromes Associated with Ovarian Neoplasms: A Comprehensive Review. *RadioGraphics* Jul 2010, 30:4, 903-919. <http://doi.org/10.1148/rg.304095745>.

MP021

Deep Breathing Reduces Blood Pressure in Healthy Normotensive Young Adult Subjects

A. Fikry¹, A. Abdullah¹, S.R Zatalia², N. Machmud², A. Albaar², K. Hasyim², H. Kasim², H. Rasyid², S. Bakri²

¹*Department of Internal Medicine, Faculty of Medicine, Hasanuddin University, Makassar, Indonesia*

²*Division of Kidney and Hypertension, Department of Internal Medicine, Faculty of Medicine, Hasanuddin University, Makassar, Indonesia*

Background and aims

White Coat Syndrome (WCS) is a condition where blood pressure (BP) measured at the clinic is higher than at home, which consists of white coat effect and white coat hypertension. This condition causes errors in the diagnosis of hypertension and blood pressure control. This phenomenon can be overcome by deep breathing (DB). This study intended to evaluate the effect of DB on changes in Systolic Blood Pressure (SBP) and Diastolic Blood Pressure (DBP) in

healthy normotensive young adult population.

Methods

Clinical trial One-group pre-posttest design, conducted on 112 subjects normotensive (< 140 mmHg and/or BP < 90 mmHg). BP measurement with automatic blood pressure monitoring (Omron HEM-7320). Initial BP measurements and BP measurements were taken at 1, 3, and 5 minutes without DB. At another time, the same subject was measured initial BP, then performed DB (breathing in 8 cycles/minute, 4 seconds of inspiration and 4 seconds of expiration), then at minutes 1, 3 and 5. Statistical test with paired t- test, with significance if $p < 0.05$.

Result

The comparison of the decrease in SBP before and after DB was significant at minute 1 (-0.88 ± 3.00 vs -6.91 ± 3.91 mmHg), minute 3 (-1.63 ± 3.52 vs -5.93 ± 4.77 mmHg) and minute 5 (-1.47 ± 3.91 vs -3.82 ± 5.39 mmHg). The comparison of the decrease in DBP before and after DB was significant at minute 1 (-0.98 ± 4.33 vs -3.74 ± 4.31 mmHg) and minute 3 (-1.47 ± 4.97 vs -2.60 ± 4.25 mmHg).

Conclusion

DB significantly lowers BP in the first minute, followed by the third and fifth minutes. Deep Breathing should be done before the BP examination at the clinic to avoid the occurrence of WCS.

Keywords

Deep breath, Blood Pressure.

Controlling Hypertension in Breastfeeding Woman: A Case Report

Bramantya Wicaksana¹, Anandhara Indriani¹

¹Department of Internal Medicine of Faculty Medicine of Universitas Indonesia and Cipto Mangunkusumo Hospital.

Background

Controlling hypertension during lactation is a challenging situation due to inconsistency information of antihypertensive. Hence, we presented a case report regarding treating hypertension in breastfeeding woman with two organ damage.

Case illustration

A 32-year-old female was come to polyclinic with history of sectio cesarea due to severe pe-eclamsia on two weeks ago. She complained mild headache and blurred vision since two weeks and blood pressure was 210/110 mmHg. Other vital sign and physical examination within normal limit. Patient was known with hypertension since two years ago and well-controlled with ramipril 5 mg a day. However, the blood pressure did not reach the target since first pregnancy even though methyldopa 500 mg three times a day consumed regularly.

Patient was admitted to intermediate ward, got nifedipine until blood pressure below 140/90 mmHg. We did collaboration with ophthalmologist and neurologist, retinopathy hypertensive and infarct lacunar on sinistra subcortical lobus frontalis was concluded. After prompt treatment, symptoms were resolved and patient was discharged. She took adalat oros 90 mg a day, candesartan 16 mg two times a day, propranolol 10 mg three times a day and aspilet 80 mg a day.

On the next polyclinic visit, patient did not have any symptoms and no problem during lactation, blood pressure was 123/90 mmHg and took medicine regularly.

Discussion

Managing hypertension during lactation needs special attention regarding medication. Nowadays, no antihypertensive are licensed for breast-feeding woman. All of the studies were observational and based on expert opinion. A

study revealed angiotensin conversion enzyme inhibitor (ACEI) like captopril and enalapril was considered to be safe in breastfeeding and can be used for patient with renal or cardiac protection. Other class of drugs also can be option in breastfeeding woman, such as beta blocker, calcium channel blocker, and alpha 1 or 2 agonist. In addition, assessing contraindication such as having asthma, history of mental health disorder and hepatic disease need to be recognized. Achieving targetted blood pressure and tight evaluation is still the key of management of hypertension aside with lifestyle modification.

Keywords

hypertension, breastfeeding woman, anti-hypertensive.

POSTER SCHEDULE

Poster Number	Title	Institution	Presenter
P001	Neuropeptide Y Levels effect on blood pressure in chronic kidney disease patients with hypertension	Internal Medicine Departement, Medical Faculty, Universitas Sumatera Utara, Medan, Indonesia	Wendy
P002	DRY WEIGHT GAIN AND INCIDENCE OF INTRADIALYTIC HYPERTENSION: A CROSS-SECTIONAL STUDY IN RURAL HOSPITAL	Dr. Mohammad Hoesin General Hospital Palembang Indonesia	HERLENI KARTIKA
P003	WHY THEY DON'T TAKE THE PILL: A QUALITATIVE STUDY OF ANTIHYPERTENSIVE MEDICATION NONADHERENCE IN EAST BORNEO PRIMARY HEALTH CARE	Department of Public Health, Faculty of Medicine, Mulawarman University of Samarinda	Lili Widianto
P004	Antihypertensive Effect of Nigella Sativa (Habbatus Sauda) Supplementation in Population with Cardiometabolic Risk Factors: A Systematic Review and Meta-Analysis of Randomized Controlled Trials		Dela Ulfiarakhma

Poster Number	Title	Institution	Presenter
P005	RISK FACTORS OF PERIPHERAL ARTERY DISEASE IN THE HYPERTENSIVE CHRONIC KIDNEY DISEASE PATIENTS ON HEMODIALYSIS	Division of Nephrology and Hypertension, Department of Internal Medicine, Faculty of Medicine Sam Ratulangi University, Prof. dr. RD. Kandou Hospital, Manado, Indonesia	Octavianus Umboh
P006	CHARACTERISTICS OF HYPERTENSION IN OUTPATIENT SARI DHARMA CLINIC DENPASAR BALI	Sari Dharma Clinic	Dewa Ayu Rina Wiana Dewi
P007	Impact of Hypertension and Kidney Disease On Coronary Artery Disease Patients Admitted to Intensive Cardiovascular Care Unit In Sanglah Hospital Bali, Indonesia: A Perspective on The Relationship Of Kidney Disease and Cardiovascular Disease	Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia	Putu Satyakumara Upadhana
P008	Impact of Hypertension and COVID-19 On Outcome Of All Types Of Cardiovascular Emergency Patients Admitted to Intensive Cardiovascular Care Unit In Sanglah Hospital Bali, Indonesia: How COVID-19 and Metabolic Comorbidities Effecting The Systematic Approach	Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia	Putu Satyakumara Upadhana

Poster Number	Title	Institution	Presenter
P009	Association Of Hypertension With Multiple Pre-existing Comorbidities and Its Impact On COVID-19 Patients Hospitalized At Sanglah General Hospital Denpasar, Bali, Indonesia In 2021: The Double Menace Of COVID-19, A New Challenge On Fighting The Pandemic?	Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia	Putu Satyakumara Upadhana
P010	Blood Pressure Measurement Using A Cuffless Smartwatch / Smartphone Versus Conventional Cuffed-Based: A Systematic Review and Meta-Analysis	Hasan Sadikin General Hospital, Bandung	Edwin Chandra
P011	THE THERAPEUTIC VALUES OF CATHETER-BASED RENAL DENERVATION PROCEDURE AGAINST RESISTANT HYPERTENSION IN PATIENTS WITH OR WITHOUT CHRONIC KIDNEY DISEASE: REVISITING THE PROMISING PROSPECT	Columbia Asia Hospital Pulomas	Michele Sabatini Siregar
P012	Observing Patients Non-Adherence to Hypertension Control during COVID-19 Pandemic: A Qualitative Study in The Public Health Center Setting	Baturiti I Public Health Center	I Putu Hendri Aryadi

Poster Number	Title	Institution	Presenter
P013	Effects of Whole-body Vibration Training on Blood Pressure in Postmenopausal Women with Hypertension: A Systematic Review	Faculty of Medicine, Universitas Indonesia	Isma Zahira Suhaima
P014	Comparison Side Effects of Alikiren vs Ramipril in Patients with Hypertension: A Meta-Analysis	Medicine Faculty of Mataram University	I Ketut Suarthaputra Pratama, Alya Tanti Nurjanah, Nada Nafisha Humaera, Yusra Pintaningrum,MD
P015	Intradialytic Hypertension, What are the Related Factors?	Roemani Muhammadiyah Hospital, Semarang, Indonesia	Langgeng Perdhana
P016	SYSTOLIC BLOOD PRESSURE VARIABILITY AS PREDICTOR OF ADVERSE OUTCOMES IN PATIENTS UNDERWENT MYOCARDIAL REVASCULARIZATION: A SYSTEMATIC REVIEW AND META-ANALYSIS	Abdul Moeloek General Hospital	Widyan Putra Anantawikrama
P017	Serum Uric Acid Level as a Potential Biochemical Marker in Determining The Severity and Duration of Hypertension: A Prospective Observational Analytic Study	RSUD KH Daud Arif Kuala Tungkal, Jambi	dr. Yogha Pratama

Poster Number	Title	Institution	Presenter
P018	Clear Evidence That Uncontrolled Hypertension Increases the Incidence of Acute Coronary Syndrome	RSUD Abdul Moeloek	Doni Surya
P019	Is Poor Adherence to Hypertensive Treatment Associated with the Risk of Obstructive Sleep Apnea in Long Term Dialysis Patients?	Departemen IPD FK USU, Medan, Sumatera Utara	dr. Anandita Putri
P020	White Coat Hypertension: An Important but a Neglected Case Report	RSJPD Harapan Kita	Try Wijayanthie
P021	Admission of Systolic Blood Pressure and Antecedent Hypertension Worsening the Short-Term Outcomes After ST-Segment Elevation Myocardial Infarction	UNIVERSITAS BRAWIJAYA	Muhamad Rizki Fadlan
P022	Nighttime vs Morning Administration of Antihypertensive Drug Regimens Containing Amlodipine in Reducing 24-Hour Blood Pressure in Primary Hypertension: an Evidence-Based Case Report	Salak Hospital Bogor	Muammar Emir Ananta

Poster Number	Title	Institution	Presenter
P023	Non-Specific Symptoms in Hypertensive Emergency Patients with Non-ST Segment Elevation Acute Coronary Syndrome: A Challenging Case in Limited Facility	Kartika Kasih General Hospital, Sukabumi City, West Java, Indonesia	Icha Fariyah Deniyati Faratisha
P024	Blood Pressure Diary as a Community-Based Intervention to Increase Hypertensive Patients' Perception of Treatment: a Preliminary Study	RSU Islam Klaten	Achmad Bima Aryaputra
P025	Hypertension and Pre-existing Comorbidities Associates With Major Adverse Cardiac Events In Coronary Artery Disease Patients Admitted To Intensive Cardiovascular Care Unit In Sanglah Hospital : The Many Faces of A Silent Killer	Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia	Putu Satyakumara Upadhana
P026	Correlation Between Uric Acid Level and Erectile Dysfunction in Controlled Hypertension Male Patients	Departement of Internal Medicine, Faculty of Medicine, Sam Ratulangi University/ Prof dr. R D. Kandou General Hospital, Manado, Indonesia	Richard Sengkey
P027	An Approach to Manage a 38 Year-Old Woman with Postpartum Dyspnea	Universitas Brawijaya	Monika Sitio

Poster Number	Title	Institution	Presenter
P028	Profile of Hypertension in Young Adult Patient in Malang City, Indonesia	brawijaya university	Diah Ivana Sari
P029	HYPERTENSION WITH NON-HEMORRHAGIC STROKE IN UNIVERSITAS KRISTEN INDONESIA GENERAL HOSPITAL	Universitas Kristen Indonesia	Frits R.W. Suling
P030	FRUITS AND VEGETABLES INTAKE AND RISK OF HYPERTENSION: A META-ANALYSIS OF PROSPECTIVE COHORT STUDIES	Mataram University and West Nusa Tenggara Central Hospital	Ismi Aifa Kamilia
P031	Characteristics and mortality in hypertensive COVID-19 patients at a district hospital in North Jakarta: a cross-sectional study	Tugu Koja District Hospital, Jakarta	Tantika Andina
P032	CHARACTERISTICS OF HYPERTENSION IN OUTPATIENT SARI DHARMA CLINIC DENPASAR BALI	Sari Dharma Outpatient Clinic Denpasar Bali	Ida Bagus Aditya Nugraha

Poster

Free Paper

P001

Neuropeptide Y Levels effect on blood pressure in chronic kidney disease patients with hypertension

Riri Andri Muzasti¹, [Wendy](#), Ricke Loesnihari³,

¹Divisi Nefrologi-Hipertensi Nephrology-Hypertension Division, Internal Medicine Departement, Medical Faculty, Universitas Sumatera Utara, Medan, Indonesia

²Internal Medicine Departement, Medical Faculty, Universitas Sumatera Utara, Medan, Indonesia

³Pathology Clinic Department, Medical Faculty, Universitas Sumatera Utara, Medan, Indonesia

Abstract

Background

Impaired kidney function in Chronic Kidney Disease (CKD) results in increase sympathetic nerve activation, therefore CKD patients often experience hypertension (Ht). Increased sympathetic nerve tone is mediated by increment of sympathetic neurotransmitter which is Neuropeptide Y (NPY).

Objective

This study aims to identify Neuropeptide (NPY) levels effect on blood pressure (BP) in CKD patients with hypertension and compare with healthy population.

Methods

This case-control study involved 43 CKD patients with regular hemodialysis, 20 non-dialysis CKD stage 1-5 patients and 25 healthy controls. NPY levels were checked by enzyme-linked immunosorbent assay (ELISA). It said to be significant if p value < 0.05.

Results

This study shows that NPY levels have a significant effect on BP. Patients with Ht grade II had higher NPY levels (885.80 ng/L) than Ht grade I (423.18 ng/L) or controlled Ht (464.06 ng/L) ($p=0.024$), but it was higher in controlled (937.56 ng/L) than CKD patients (617.14 ng/L) ($p=0.06$).

Conclusions

NPY levels affect BP. It seem displays a bidirectional effect in cardiovascular tissue, acting as a cardio-depressant and a cardio-stressor.; lowers BP in healthy populations but increases BP in CKD patients. Further research is needed to prove bidirectional effect of NPY levels and control other factors that influence BP, such as adherence to Ht medication, inflammation, and ages so that the results of this study can represent a large population.

Keywords

Blood pressure, Chronic Kidney Disease, Neuropeptide Y.

P002

DRY WEIGHT GAIN AND INCIDENCE OF INTRADIALYTIC HYPERTENSION: A CROSS-SECTIONAL STUDY IN RURAL HOSPITAL

[Herleni Kartika](#)^{1,2}, [Deddy Primadona Mulia](#)^{1,3}, [Ian Effendi](#)¹, [Zulkhair Ali](#)¹, [Novadian Suhaimi](#)¹, [Suprapti](#)¹, [Zaini Dahlan](#)², [Sri Arisandi](#)², [Rico Irawan](#)³, [Eddy Yuristo](#)⁴, [Chyntha Rahma Vanvie](#)⁴

¹Division of Nephrology and Hypertension, Departement of Internal Medicine, Faculty of Medicine, Universitas Sriwijaya/Mohammad Hoesin General Hospital, Palembang, Indonesia; ²Arga Makmur Regional Hospital, North Bengkulu Regency, Bengkulu; ³OKU Timur Regional Hospital, Gumawang, Indonesia; ⁴Department of Internal Medicine, Faculty of Medicine, Universitas Sriwijaya/Mohammad Hoesin General Hospital, Palembang, Indonesia

Abstract

Background

Intradialytic hypertension (HID) is defined as an increase in post-dialysis systolic blood pressure with a post-dialysis and pre-dialysis difference of Systolic Blood Pressure (SBP) ≥ 10 mmHg. HID affects up to 15% of hemodialysis patients and occurs more frequently in older patients, have a lower dry weight, take antihypertensive drugs, and have lower serum creatinine values. It was known to be related to increased morbidity and mortality. To prevent HID, the identification of other risk factors was crucial. Current study aims to determine the relationship between dry weight gain and the incidence of intradialytic hypertension.

Methods

This research method was a cross-sectional study. The study was taken on December 2021 at Hemodialysis Unit of Arga Makmur Regional Hospital, North Bengkulu Regency, Bengkulu.

Result

There was 27.7% subject having intradialytic hypertension among 54 subjects. The variables consist of gender, age, and etiology did not show any statistically significant relationship toward increased dry weight and the incidence of

intradialytic hypertension. Chi-Square test results was $p > 0.005$. The paired t-test showed a significant difference among dry weight, systolic and diastolic blood pressure before and after hemodialysis, with p -value = 0.000 ($p < 0.005$). Increased dry weight gain more than 1 kg was related to 1.7 (95%CI 1.3-2.1) times increased risk of intradialytic hypertension among patients undergoing hemodialysis.

Conclusion

The dry weight gain had a statistically significant relationship to the incidence of intradialytic hypertension.

Keywords

intradialytic hypertension, Dry Weight Gain, Hemodialysis, CKD.

P003

WHY THEY DON'T TAKE THE PILL: A QUALITATIVE STUDY OF ANTIHYPERTENSIVE MEDICATION NONADHERENCE IN EAST BORNEO PRIMARY HEALTH CARE

[Widianto, L](#); [Susilowati, I](#); [Bakhtiar, R](#); [Fitriani, E](#)

Department of Public Health, Faculty of Medicine, Mulawarman University of Samarinda, East Borneo, Indonesia

Abstract

Background

Adherence to antihypertensive medication is one of the key drivers of optimal blood pressure control. We found nonadherence to antihypertensive medication in some patients in the Sempaja Primary Health Care.

Objective

To determine the factors that influence the patient's nonadherence to antihypertensive medication.

Method

Qualitative study with in-depth interview method. Inclusion criteria are aged > 18 year old, diagnosed with hypertension for at least 1 year, nonadherence

to antihypertensive medication based on medical record and MMAS-8 (Morisky 8-Item Medication Adherence Questionnaire). In-depth interview was recorded, transcribed, reflected, and identified by triangulation method.

Result

We have 9 subjects (67% female, 33% male), age range of 35-35 years (22.2%), 46-55 years (33.3%), >55 years (44.4%). Educational state were elementary school (44.4%), junior high school (11.1%), senior high school (44.4%). All subjects were covered by national health insurance. All subjects had blood pressure >140/90 mmhg. The pattern of antihypertensive prescribed were single oral antihypertensive (33%) and combination oral antihypertensive (67%). The identified factors are patient factors (lack of knowledge, unaware attitude, negative stigma toward primary health care), drug factors (side effect and alternative local herbal alternative), environmental factors (busy to work, wrong information from family and neighbors), healthcare system factors (difficulty in transportation, unfriendly services, low quality of education and counseling , limited drug options).

Conclusion

Many factors lead to antihypertensive medication nonadherence in primary health care. We need to systematically identify the causes, optimize education and counseling, optimize prolanis program, treated hypertension with an individual approach, and invite community leaders to participate in solving existing problem.

Antihypertensive Effect of *Nigella Sativa* (Habbatus Sauda) Supplementation in Population with Cardiometabolic Risk Factors: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

[Dela Ulfiarakhma](#)¹, [Rido Mulawarman](#)², [Monica Trifitriana](#)², [Mulawarman](#)³, [Alexander Edo Tondas](#)⁴

¹Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia

²Faculty of Medicine, Sriwijaya University, Palembang, South Sumatra, Indonesia

³Department of Agriculture and Plant Protection, Faculty of Agriculture, Sriwijaya University, South Sumatra, Indonesia

⁴Department of Cardiology and Vascular Medicine, Mohammad Hoesin General Hospital, Palembang, South Sumatra, Indonesia

Background

Nigella sativa or Habbatus Sauda is known to have beneficial effect to reduce blood pressure and other cardiovascular markers. But antihypertensive effect of *N. sativa* in hypertensive population remains controversial.

Objective

We aim to assess the latest evidence of antihypertensive effect of *N. sativa* in patients with cardiometabolic risk factors.

Method

A systematic review and meta-analysis was conducted according to the PRISMA statement. We systematically searched relevant studies in Pubmed, Cochrane, and Scopus from the date of inception until January 2022. Outcomes of interest were reduction of systolic blood pressure (SBP), diastolic blood pressure (DBP), and heart rate.

Results

A total of 974 patients from 13 randomized controlled trials were included. Mean duration of treatment was 7.15 weeks. Pooled analysis showed that *N. sativa* supplementation significantly reduce both SBP (MD -3.93 [-5.72, -2.14], $p < 0.0001$; I^2 : 39%, $p = 0.07$) and DBP (MD -3.26 [-4.76, -1.75], $p < 0.0001$; I^2 : 54%, $p = 0.01$) compared to placebo group. Subgroup analysis showed that BP

was reduced significantly in both hypertensive and non-hypertensive group, although non-hypertensive group had greater SBP and DBP reduction. NS powder showed greater SBP reduction compared to NS oil (MD -5.22 vs -2.77). Heart rate was also significantly reduced in NS group (MD -2.25 [-2.25, -0.54], $p < 0.001$; I^2 : 0%, $p = 0.86$).

Conclusion

This meta-analysis suggests short-term treatment with *N. sativa* is associated with significant reduction of SBP, DBP, and heart rate in hypertensive and non-hypertensive patients with cardiometabolic risk factors. Future trials are needed to strengthen the evidence of long-term antihypertensive effect of *N. sativa*.

Keywords

Nigella sativa, Blood Pressure, Hypertension, Meta-Analysis

Systolic Blood Pressure Reduction

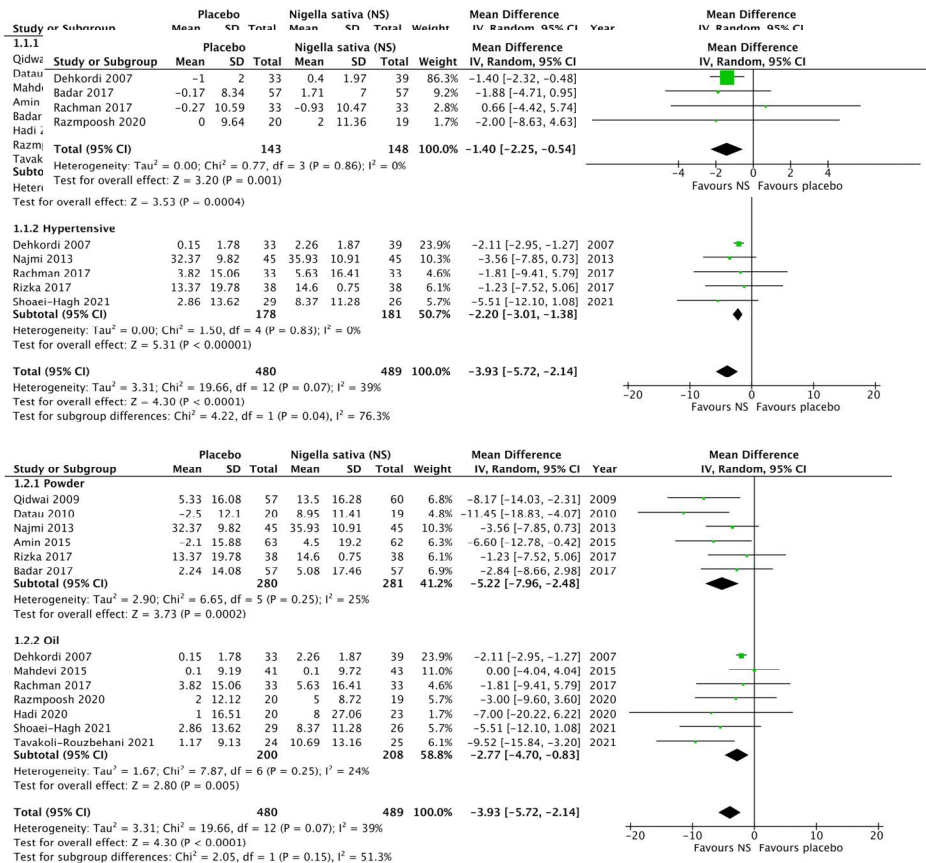


Figure 1. Forest plot of mean systolic blood pressure (SBP) reduction

Diastolic Blood Pressure Reduction

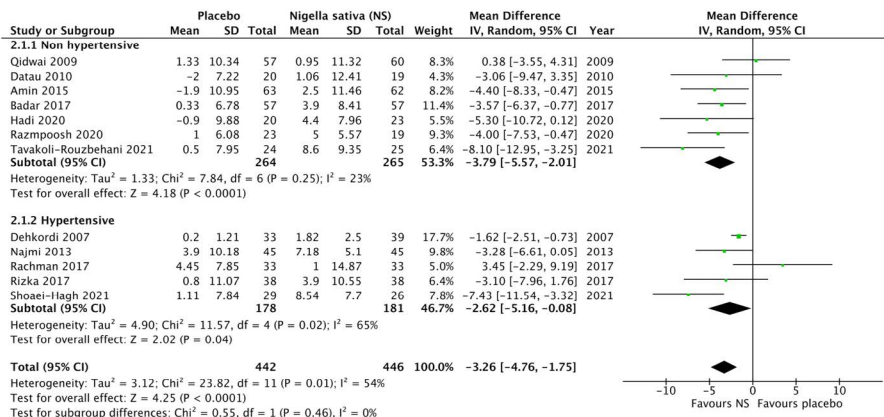


Figure 2. Forest plot of mean diastolic blood pressure (DBP) reduction

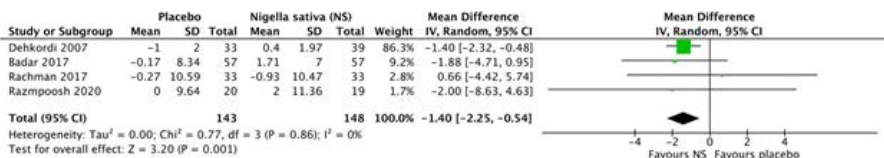


Figure 3. Forest plot of mean heart rate reduction

P005

Risk Factors of Peripheral Artery Disease in The Hypertensive Chronic Kidney Disease Patients on Hemodialysis

Octavianus Umboh, Stella Palar, Emma Moeis

Division of Nephrology and Hypertension, Department of Internal Medicine, Faculty of Medicine Sam Ratulangi University, Prof. dr. RD. Kandou Hospital, Manado, Indonesia

Background

Hypertensive chronic kidney disease (CKD) patients have increased risk of having peripheral artery disease (PAD), especially when combined with traditional PAD risk factors. Prevalence of PAD among CKD patients were variably reported.

Objective

To analyze the risk factors of PAD in the hypertensive CKD patients on hemodialysis.

Method

Cross-sectional study was conducted in December 2021 in Prof.dr.RD.Kandou Hospital, Manado. Patients aged \geq 18 years-old on hemodialysis at least twice a week for three months and taking anti-hypertension were included. Patients that refused and unable to be performed Ankle Brachial Index (ABI) due to physical limitation were excluded. Smoking, hemodialysis duration, anti-hypertension, alcohol intake history was taken. Laboratory (ureum-creatinine, albumin, lipid-profile, fasting-blood-glucose [FBG], hemoglobin, leukocyte, phosphate, calcium, uric acid, calcium-phosphate-product) and ABI examination was performed one day before patient's regular hemodialysis schedule.

Result

On this study, among 30 patients, PAD prevalence was 50% with median age 55.5 (IQR 13) and 56.7% was male. Among those with PAD, 66.7% had PAD on both legs, 86.7% with mild PAD and 13.3% with moderate. All of them were asymptomatic. Diabetes mellitus ($p=0,025$), elevated FBG ($p=0.006$), and low-density-lipoprotein (LDL) level ($p=0.017$) were associated with PAD in this

study. Other risk factors were not significant.

Conclusion

PAD prevalence among hypertensive CKD patients on hemodialysis was high and all of them were asymptomatic. Diabetes mellitus, elevated FBG and LDL level were associated with PAD risk factors. Screening and management of PAD should be employed for those with risk factors.

Keywords

Peripheral artery disease, chronic kidney disease, hemodialysis, hypertension, risk factor.

P006

CHARACTERISTICS OF HYPERTENSION IN OUTPATIENT SARI DHARMA CLINIC DENPASAR BALI

[Dewa Ayu Rina Wiana Dewi¹](#), [Ida Bagus Aditya Nugraha²](#)

¹General Practitioner at Sari Dharma Outpatient Clinic Denpasar Bali, ²Internist at Sari Dharma Outpatient Clinic Denpasar Bali

Abstract

Background

Prevalence of hypertension (HT) in outpatient clinic remains high and increasing overtime, especially in Asian. The mortality higher among those people, hence hypertension is a leading cause of many morbidities such as type 2 diabetes mellitus, cardiovascular event, and end stage renal disease.

Objective

The purposes of this study is to determine the characteristics among HT patient in outpatient Sari Dharma Clinic Denpasar Bali

Method

We performed cross-sectional study with all HT patients >18 years old. The data were collected from medical record since August 2021-Januari 2022. The diagnosis was made based on NKF-KDOQI 2021 if blood pressure > 140/90.

Result

114 patients were included. We found 47 (41,2%) were male and 67 were female (58,8%), 63 (55,3%) were obese and 51 (44,7%) normal. About 54 sample (47,4%) take 1 tablet and 60 (52,6%) sample take combination anti-hypertensive drug. Approximately 62,3% patients have HT with comorbidity and 37,7% without comorbidity. The mean of age was 54.86 years old and mean arterial blood pressure was 102,29 mmHg, the mean of systolic blood pressure was 141.36 mmHg and diastolic blood pressure was 82.75 mmHg.

Conclusion

In summary, this study showed that patient with hypertension tends to have comorbidities. Female was the most likely to have hypertension. The majority of patient used combination anti-hypertensive agents. This study may be use as primary data for analytical studies about correlation of HT and some of risk factor.

Keywords

Characteristic, Hypertension, Outpatient, Sari Dharma Clinic.

P007

Impact of Hypertension and Kidney Disease On Coronary Artery Disease Patients Admitted to Intensive Cardiovascular Care Unit In Sanglah Hospital Bali, Indonesia: A Perspective on The Relationship Of Kidney Disease and Cardiovascular Disease

P.S. Upadhana¹, I.G.G. Sastrawan¹, A.T.D. Putri¹, N.L.S. Darmayanti¹, G.N.P. Jagannatha¹, A.K. Umam¹, I.W.A.S. Pradnyana¹, I.G.A.A.C, Cahyarini¹, A.R Wijaya¹, I.B.R Wibhuti²

¹Bachelor of Medicine and Medical Profession Study, Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia; ²Division of Cardiology, Sanglah General Hospital Denpasar, Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia

Background

Hypertension and kidney disease comorbidity seems to be linked with worse outcomes and increased risk of death in patients with coronary artery disease

(CAD).

Objective

This study aims to determine the impact of hypertension and kidney disease on outcome of patients with CAD.

Method

This research is an analytic study with a cross-sectional approach. The data used is secondary data from the records of CAD patients who were admitted to ICCU at Sanglah Hospital on 1 January 2021- 31 December 2021 with total sampling technique.

Result

There were 376 patients included in this study. The majority of patients were male (n=291, 77.4%) with the median overall patient age of 58 years old. Most of the patients were classified as STEMI (n=210;55.8%). Most of the pre-existing comorbidities found in the patients were kidney disease (n=141; 37.5%). The prevalence of hypertension was 19.1%. There were significant differences in length of in-hospital stay duration (p=0.045), hemoglobin (p=0.013), uric acid (p=0.003), and GFR (p=0.000) in the patients classified based on hypertension comorbidity. Chi-square analysis showed that cerebrovascular disease (PR=2.081;95%CI=1.272-3.405;p=0.007), malignant arrhythmia (PR=1.878;95%CI=1.234-2.856;p=0.004), hyperuricemia (PR=1.596;95%CI=1.020-2.499;p=0.046), and ADHF (PR=2.353;95%CI=1.544-3.586;p=0.000) were significantly associated with hypertension. Logistic regression analysis showed a significant association of malignant arrhythmia (PR=1.842;95%CI=1.083-3.451;p=0.047), and ADHF (PR=2.109;95%CI=1.026-4.336;p=0.042) with hypertension. Mortality (PR=1.951;95%CI=1.519-2.504;p=0.000), malignant arrhythmia (PR=1.498;95%CI=1.148-1.954;p=0.005), and ventilator usage (PR=1.656;95%CI=1.128-2.430;p=0.033) were significantly associated with kidney disease.

Conclusion

There were significant association between pre-existing comorbidities with hypertension and kidney disease. Intervention on these factors can prevent further mortality.

Keywords

Hypertension, Kidney disease, Coronary artery disease.

Impact of Hypertension and COVID-19 On Outcome Of All Types Of Cardiovascular Emergency Patients Admitted to Intensive Cardiovascular Care Unit In Sanglah Hospital Bali, Indonesia: How COVID-19 and Metabolic Comorbidities Effecting The Systematic Approach and Consideration To Acute Cardiovascular Emergencies In The Pandemic Situation

P.S. Upadhana¹, I.G.G. Sastrawan¹, A.T.D. Putri¹,
N.L.S. Darmayanti¹, G.N.P. Jagannatha¹, A.K. Umam¹,
I.W.A.S. Pradnyana¹, I.G.A.A.C, Cahyarini¹, A.R Wijaya¹,
I.B.R Wibhuti²

¹*Bachelor of Medicine and Medical Profession Study, Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia;* ²*Division of Cardiology, Sanglah General Hospital Denpasar, Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia*

Background

COVID-19 and hypertension seems to be linked with worse outcomes in patients with cardiovascular emergency.

Objective

This study aims to determine the impact of COVID-19 and hypertension on outcome of patients with cardiovascular emergency.

Method

This research is an analytic study with a cross-sectional approach. The data used is secondary data from the records of patients who were admitted to ICCU at Sanglah Hospital on 1 January 2021- 31 December 2021 with total sampling technique.

Result

There were 511 patients included in this study. The majority of patients were male (n=362, 70.8%) with the median overall patient age of 58 years old. Most of the cardiovascular emergency found in the patients was acute coronary syndrome (n=464; 90.8%) A total of 124 patients confirmed as COVID-19 (24.3%), and

109 patients had hypertension (21.3%). There were significant differences in length of in-hospital stay duration ($p=0.001$), hemoglobin ($p=0.000$), and GFR ($p=0.000$) in the patients classified based on hypertension comorbidity. Chi-square analysis showed that malignant arrhythmia (PR=1.536;95%CI=1.095-2.156; $p=0.015$), diabetes mellitus type 2 (DMT2) (PR=1.462;95%CI=1.040-2.054; $p=0.031$), cerebrovascular disease (PR=2.011;95%CI=1.331-3.038; $p=0.002$), lung edema (PR=1.613;95%CI=1.155-2.253; $p=0.006$), were significantly associated with hypertension. Logistic regression analysis showed that there was a significant association of DMT2 (PR=1.656;95%CI=1.025-2.674; $p=0.039$), cerebrovascular disease (PR=2.239;95%CI=1.125-4.456; $p=0.022$) and lung edema (PR=1.641;95%CI=1.010-2.667; $p=0.045$) with hypertension. Mortality (PR=2.246;95%CI=1.079-4.676; $p=0.028$), and malignant arrhythmia (PR=2.240;95%CI=1.107-4.534; $p=0.022$) were significantly associated with hypertension and COVID-19 comorbidity.

Conclusion

There were significant association between pre-existing comorbidities with COVID-19 and hypertension. Intervention on these factors can prevent further mortality.

Keywords

Cardiovascular emergencies, COVID-19, hypertension, Intensive care unit.

Association Of Hypertension With Multiple Pre-existing Comorbidities and Its Impact On COVID-19 Patients Hospitalized At Sanglah General Hospital Denpasar, Bali, Indonesia In 2021: The Double Menace Of COVID-19, A New Challenge On Fighting The Pandemic?

P.S. Upadhana¹, I.G.G. Sastrawan¹, A.T.D. Putri¹, N.L.S. Darmayanti¹, G.N.P. Jagannatha¹, A.K. Umam¹, I.W.A.S. Pradnyana¹, I.G.A.A.C, Cahyarini¹, A.R Wijaya¹, I.B.R Wibhuti²

¹Bachelor of Medicine and Medical Profession Study, Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia; ²Division of Cardiology, Sanglah General Hospital Denpasar, Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia

Background

Hypertension and others underlying comorbidities are associated with both increased susceptibility and worse outcomes of COVID-19.

Objective

This study aims to identify the impact of hypertension on COVID-19 patients.

Methods

This research is an analytic study with a cross-sectional approach. The data used is secondary data from the records of COVID-19 patients who were hospitalized at Sanglah Hospital on 1 January 2021- 31 December 2021 with total sampling technique.

Result

There were 345 patients included in this study. The majority of patients were male (n=175;50.7%) with the median overall patient age of 57 years old. Most of the patients were classified as severe COVID-19 (n=224; 64.9%). A total 102 patients had hypertension (29.6%). Most of the comorbidities found in the patients were cardiovascular disease (n=134;38.8%) and diabetes mellitus type 2 (DMT2) (n=105;30.4%). The prevalence of in-hospital death was 24.9%. There were significant differences in hemoglobin (p=0.000), NLR (p=0.045), SC (p=0.000), procalcitonin (p=0.000), and d-dimer (p=0.038)

in patients classified based on the incidence of hypertension. Chi-square analysis showed that mortality (PR=1.714;95%CI=1.243-2.365;p=0.002), sepsis (PR=2.158;95%CI=1.540-3.025;p=0.000) , cardiovascular disease (CVD) (PR=1.703;95%CI=1.234-2.351;p=0.001), and severe covid-19 (PR=1.360;95%CI=1.040-1.967;p=0.045), were significantly associated with hypertension. Logistic regression analysis showed that there were significant association of mortality (PR=1.905; 95%CI=1.053-3.448;p=0.033), and cardiovascular disease (PR=1.970;95%CI=1.194-3.249;p=0.008) with hypertension. Association of hypertension with comorbidities such as CVD (PR=1.635;95%CI=1.089-2.702;p=0.045), and DMT2 (PR=3.047;95%CI=1.663-5.584;p=0.000) were significantly associated with mortality.

Conclusion

There were significant association between pre-existing comorbidities with hypertension in COVID-19 patients. Intervention on these factors can improve patient's outcome.

Keywords

Hypertension, COVID-19, Comorbidities, Outcome.

P010

Blood Pressure Measurement Using A Cuffless Smartwatch / Smartphone Versus Conventional Cuffed-Based: A Systematic Review and Meta-Analysis

E. Chandra¹, I.A. Suprijadi², N.F. Tarsidin¹ , B.T. Tiksnadi¹

¹Department of Cardiology and Vascular Medicine, Universitas Padjadjaran, Bandung, Indonesia

²Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia

Aims

This study aimed to compare blood pressure (BP) measurement results between cuffless and conventional cuffed-based devices.

Methods

Systematic literature searches of PubMed, Science Direct, Proquest, and Springer Link databases were performed on June 2021. Studies comparing

data of in-office BP measurement, including systolic blood pressure (SBP) and diastolic blood pressure (DBP), in healthy adult subjects using cuffless and conventional cuffed-based devices are included. BP measurement should be conducted twice and alternately using both devices at one time. Studies that reported only one outcome parameter were also included. Two reviewers evaluate the quality of included studies using The Newcastle-Ottawa Scale. A random-effects meta-analysis of mean difference (MD) was conducted. A publication bias test was conducted using a funnel plot for outcomes that have ten studies included.

Results

We identified eleven studies comprising of 2344 healthy adult subjects which three studies only reported SBP data. The included studies tend to have reporting and attrition bias. The meta-analysis results showed that cuffless device measured lower than conventional cuffed-based device for SBP by 2.64 mmHg (MD -2.64, 95%CI -4.83 to -0.46, $p=0.02$; I^2 74.5%). However, DBP results have no difference for both devices (MD -0.43, 95%CI -3.88 to 3.02, $p=0.81$; I^2 91.1%). The funnel plot demonstrated slightly asymmetrical distribution of studies that indicating lower measurements for SBP most likely found in study with large samples.

Conclusion

The cuffless device measured lower SBP compared than the conventional cuffed-based device whereas there is no difference in DBP. Nevertheless, the heterogeneity between studies was high.

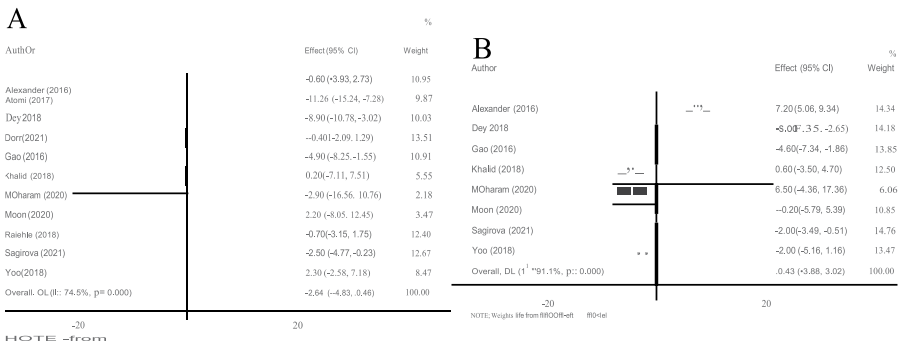


Fig. (A) Mean difference of Systolic Blood Pressure between Smartphones/Smartwatches and Conventional Cuffed Blood Pressure Measurement. (B) Mean difference of Systolic Blood Pressure between Smartphones/Smartwatches and Conventional Cuffed Blood Pressure Measurement.

Sma1·twatcbes.Cuffiess and Conventional Cuffed Blood Pressure
:Measm't"ment.

P011

THE THERAPEUTIC VALUES OF CATHETER-BASED RENAL DENERVATION PROCEDURE AGAINST RESISTANT HYPERTENSION IN PATIENTS WITH OR WITHOUT CHRONIC KIDNEY DISEASE: REVISITING THE PROMISING PROSPECT

A Systematic Review and Meta-Analysis

M. Sabatini Siregar¹, G. Harmany²

¹General Practitioner, Columbia Asia Hospital, Jakarta, Indonesia

²General Practitioner, Fatima Hospital Ketapang, West Kalimantan, Indonesia

Corresponding E-mail: michellesabatini@gmail.com

Background

The increasing incidence of uncontrolled hypertension despite a greater number of therapies has been described as the "hypertension paradox". CKD often complicates antihypertensive treatment by rendering the disease resistant to treatment. Recently, catheter-based renal denervation has reemerged as potential treatment for resistant hypertension. Several trials reported significant SBP-lowering effects in patients treated with catheter-based renal denervation.

Objective

This meta-analysis aims to summarize the antihypertensive properties of renal denervation to control SBP in patients with resistant hypertension with CKD.

Methods

Systematic review and meta-analysis were conducted with literatures from ProQuest, Elsevier, SpringerLink, and Oxford Academic to PRISMA Guidelines for RCTs regarding SBP management with renal denervation for resistant hypertension patients with or without CKD using Renal Denervation, Resistant Hypertension, Systolic Blood Pressure and Chronic Kidney Disease as keywords.

Results

Six literatures were analyzed, consisting of 730 patients with resistant hypertension with or without CKD. The subjects underwent catheter-based renal denervation in comparison to sham procedures, in RCTs for 2-12 months. These trials exhibit beneficial antihypertensive effects of renal denervation, reducing the ambulatory 24-hour SBP (MD -8.5[-15.1 to 0.0] vs. MD -2.9[-12.6 to 2.5]; $p=0.016$) 2-months post-procedure. Other literatures also reported major office SBP decrease (180 mmHg \pm 12 to 149.0 mmHg \pm 11 vs. 181.0 mmHg \pm 19 to 179.0 mmHg \pm 5; $p=0.007$) 12-months post-procedure. Another shows significant decrease in daytime (MD -12mmHg \pm 18; $p<0.001$) and nighttime (MD -8mmHg \pm 19; $p<0.013$) SBP.

Conclusion

Renal denervation showed significant SBP lowering effects in patients with resistant hypertension based on evidences exhibited. Further research is necessary to provide more evidence to support this outcome.

Keywords

Resistant Hypertension, Renal Denervation, Systolic Blood Pressure, Chronic Kidney Disease.

P012

Observing Patients' Non-Adherence to Hypertension Control during COVID-19 Pandemic: A Qualitative Study in The Public Health Center Setting

[I Putu Hendri Aryadi¹](#), [Made Martha Pradnyana¹](#), [Made Ayu Hapsari Dwi Ambarini¹](#), [I Gusti Ayu Nila Kusumawati¹](#)

¹*Baturiti I Public Health Center, Bali, Indonesia*

Background

COVID-19 pandemic has changed many public' daily practices, including monthly medical check-up among degenerative disease patients, including hypertension patients. Some patients, for many reasons, chose to not check their health status, as well as following their therapy, as usual in the public health center. This qualitative study explored the experience of patients who did not follow their hypertension control during COVID-19 pandemic.

Method

A qualitative study was conducted in Baturiti I Public Health Center around November-December 2021. Eight hypertension patients agreed to participate in one-to-one interview designed to discover their concern regarding anti-hypertensive program non-adherence during COVID-19 pandemic. The interview data was transcribed and analyzed using interpretative phenomenological analysis.

Result

A half of respondents was female, with age range of 45-76 years old. Five out of eight respondents were treated with Amlodipine 10mg once daily. All of them had been not following their anti-hypertensive therapy for the average of 4.2 months. The fear of being infected with COVID-19 when visiting healthcare facilities was their main reason in skipping monthly hypertension control (62.5%), with no family member to accompany and has already felt well, as the side motive (37.5% and 25.0% respectively). Respondents actually felt guilty to not adhere their anti-hypertensive therapy. They also reported some health complaints, but the worry of being infected by coronavirus turned-off their will to seek for medical help. Their family also worried with their susceptible condition as an elderly. They finally restarted the monthly control when they assumed that the COVID-19 case was relatively decreased.

Conclusion

The fear of being infected by coronavirus was the main reason of patients' non-adherence to their hypertension control during COVID-19 pandemic. A direct run-in-field monthly control could be its one solution.

Keywords

non-adherence, hypertension, public health center, COVID-19

P013

Effects of Whole-body Vibration Training on Blood Pressure in Postmenopausal Women with Hypertension: A Systematic Review

[Isma Zahira Suhaima¹](#), [Sabda Ardiantara¹](#), [Diar Riyanti Rudiantmoko¹](#)

¹Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia

Background

Menopause is considered an important determinant of hypertension in women, with 41% of postmenopausal women are hypertensive. Increased blood pressure (BP) in postmenopausal women can be caused by arterial stiffness, renin-angiotensin system activation, endothelial dysfunction, lack of estrogens, sympathetic activation, anxiety, and depression. Hence, they should be given special treatment, such as exercise therapy, to improve the quality of their hypertensive therapy. Whole-body vibration training (WBVT) is a resistance training known for its ability to improve arterial stiffness. However, its ability to decrease BP is still controversial.

Objective

This study aims to identify the effects of WBVT on blood pressure in postmenopausal women with hypertension.

Method

A systematic literature search was performed using particular keywords with medical subheading (MeSH) terms on three journal databases, including Pubmed, Proquest, and Cochrane. The search results were screened and assessed using inclusion and exclusion criteria, double article, and full text

availability by three independent authors. The quality of the randomized control trial (RCT) was evaluated using the Jadad scale.

Result

Four Randomized controlled trials (RCTs) consisting of 114 total patients were eligible to fulfil the criteria. All studies showed that WBVT significantly decreased systolic (10-12 mmHg) and diastolic (5-6 mmHg) BP compared with the control group. One study also showed a reduction of mean arterial pressure (9 mmHg).

Conclusion

WBVT might be beneficial as an adjuvant therapy to reduce blood pressure in postmenopausal women with hypertension, but further research that includes more subjects is needed to confirm this result.

P014

Comparison Side Effects of Aliskiren vs Ramipril in Patients with Hypertension: A Meta-Analysis

I Ketut Suarthaputra Pratama¹, Alya Tanti Nurjanah¹, Nada Nafisha Humaera¹, Yusra Pintaningrum²

¹ Medical Professional Student, Mataram University

² Department of Cardiovascular, Mataram University and West Nusa Tenggara Central Hospital

Abstract

Background

Hypertension is a health problem that is a challenge worldwide. Several treatments are currently being developed to treat hypertension, namely by giving Renin Inhibitor (RI) and Angiotensin-Converting Enzyme Inhibitor (ACE-I) drugs. The examples of each drug class are Aliskiren (RI) and Ramipril (ACE-I). The controversy over which drug Aliskiren from the RI group and Ramipril from the ACE-I group is still ongoing and needs to be resolved.

Aims

This meta-analysis was conducted to compare the side effects experienced by

patients treated with Aliskiren and Ramipril to reduce blood pressure.

Methods

The search for published scientific articles was carried out systematically using the Preferred Reporting, Items for Systematic Review, and Meta-Analysis (PRISMA) method. The search was conducted using the Pubmed and Cochrane library databases published from 2005 to December 2021 regarding the comparison of side effects of giving Aliskiren with Ramipril in hypertensive patients.

Results

We found systematically all randomized trials whose effects were compared presenting Aliskiren with Ramipril in hypertensive patients. Five studies were included with a total of 3,381 patients randomized. Aliskiren therapy had more dominant side effects than Ramipril therapy. The side effects of Aliskiren were dizziness (OR 0.97, 95% CI 0.70-1.34; P=0.57; I²=0%), headache (OR 1.02, 95% CI 0.79-1.33; P= 0, 28; I²=21%) and cough (OR 0.30, 95% CI 0.21-0.42; P=0.37; I²=7%). Meanwhile, the side effects of ramipril were diarrhea (OR 1.08, 95% CI 0.53-2.20; P=0.10; I²=51%) and nasopharyngitis (OR 1.13, 95% CI 0, 78-1.63; P=0.80 ; I²=0%).

Conclusions

Aliskiren and Ramipril therapy both gave therapeutic effects in the form of dizziness, headache, cough, diarrhea, and nasopharyngitis. Some of the more dominant side effects found in patients receiving Aliskiren therapy were dizziness, headache, and cough. Meanwhile, diarrhea and nasopharyngitis were more frequently found in patients receiving Ramipril therapy.

Keyword

Aliskiren, Ramipril, side effect, hipertensi.

Intradialytic Hypertension, What are the Related Factors?

[Langgeng Perdhana](#)¹, [Shofa Chasani](#)^{1,2,3}

¹ Hemodialysis Unit, Roemani Muhammadiyah Hospital Semarang

² Department of Internal Medicine, Roemani Muhammadiyah Hospital Semarang

³ Department of Internal Medicine, Medical Faculty of Diponegoro University. Semarang

Corresponding Author :

Langgeng Perdhana

Hemodialysis Unit, Roemani Muhammadiyah Hospital, Semarang, Indonesia

Jl. Wonodri Baru Raya No. 22, Semarang 50242, Indonesia

Tel : +6224-84444623; Fax : +6224-8415752

Email : langgeng.p@gmail.com

Background

Intradialytic Hypertension is the most common complication in patients undergoing hemodialysis. In some studies, it increases mortality risk among hemodialysis patients. Managing its causative factors can prevent intradialytic hypertension and decrease mortality risk among hemodialysis patients.

Objective

To determine the factors related to intradialytic hypertension.

Method

A cross-sectional study occurred in November 2021 at Roemani Muhammadiyah Hospital Semarang. The inclusion criteria were undergoing hemodialysis ≥ 3 months, hemodialysis frequency twice a week, aged ≥ 18 years, communicable, and agreed to join in this study. Meanwhile, patients with incomplete data were excluded. Collected data was then analyzed using SPSS. The dependent variable was gender, duration of hemodialysis, elderly, time dialysis, and diabetes. While the independent variable was intradialytic hypertension that is defined as increasing of systolic blood pressure ≥ 15 mmHg in the end of hemodialysis session.

Result

The prevalence of intradialytic hypertension in this study is 37,8%. Chi-Square

analysis showed that patients who had undergone hemodialysis for ≥ 12 months and time dialysis ≤ 4 hours per dialysis session had a higher risk of intradialytic hypertension (p-value: 0,006; 0,028; PR= 3,844; 2,819). While gender, elderly and diabetes has no significant relationship (p-value: 0,825; 0,587; 0,123).

Conclusion

Duration of hemodialysis and time dialysis per session have significant relationship to intradialytic hypertension. While gender, elderly and diabetes.

Keywords

Blood Pressure, Chronic Kidney Disease, End-Stage Renal Disease, Hemodialysis.

P016

SYSTOLIC BLOOD PRESSURE VARIABILITY AS PREDICTOR OF ADVERSE OUTCOMES IN PATIENTS UNDERWENT MYOCARDIAL REVASCULARIZATION: A SYSTEMATIC REVIEW AND META-ANALYSIS

W. P. Anantawikrama¹, R Handayani², T. Ransun²,
R. M. Candrasatria², S. P. Iustitia²

¹General Practitioner, Abdul Moeloek General Hospital

²Cardiologist, Abdul Moeloek General Hospital

Background

Coronary Arterial Disease (CAD) has large morbidity and mortality burden, becoming the leading cause of death worldwide. High Systolic Blood Pressure (SBP) Variability has been associated with increased cardiovascular disease risk. However, the evidence of its impact on myocardial revascularization outcome is still lacking.

Objective

This study aimed to investigate the SBP variability prognostic value in patients who received myocardial revascularization.

Method

Literature search was conducted on PubMed, EMBASE, Cochrane Library, Google Scholar, and ProQuest. The outcomes were all-cause mortality and major adverse cardiovascular events (MACEs).

Result

Five cohort studies involving a total of 11,214 patients received myocardial revascularization were included, of which three studies reported data in Percutaneous Coronary Intervention (PCI) and two studies analyze the outcome on Coronary Arterial Bypass Grafting (CABG). On pooled analysis of PCI group, elevated SBP variability significantly associated with higher all-cause mortality (Hazard ratio [HR] 1.63; 95% confidence interval [CI] 1.34-1.98; $p < 0.0001$; $I^2 = 0\%$) and increased MACEs (Hazard ratio [HR] 1.38; 95% confidence interval [CI] 1.19-1.62; $p < 0.0001$; $I^2 = 12\%$). On pooled analysis of CABG group, increased SBP variability have non-significant association with higher mortality (Hazard ratio [HR] 1.29; 95% confidence interval [CI] 0.85-1.94; $p \leq 0.24$; $I^2 = 85\%$)

Conclusion

Increased SBP variability was significantly associated with higher all-cause mortality and MACEs in patients undergoing PCI, but its association is insignificant to all-cause mortality in patients who received CABG.

Keywords

Blood Pressure Variability, PCI, CABG, mortality, MACE

P017

Serum Uric Acid Level as a Potential Biochemical Marker in Determining The Severity and Duration of Hypertension: A Prospective Observational Analytic Study

Y. Pratama¹, M.R. Ramadhan², V.G. Sohan³, T. Rahadiyan⁴

¹General Practitioner, KH Daud Arif General Hospital, Kuala Tungkal, Indonesia

²Department of Cardiology and Vascular Medicine, H. Abdul Manap General Hospital, Jambi, Indonesia

³Department of Cardiology and Vascular Medicine, Bhayangkara Hospital, Jambi, Indonesia

⁴Department of Cardiology and Vascular Medicine Jambi University, Raden Mattaher General Hospital, Jambi, Indonesia

Background

Recent studies demonstrated that uric acid levels are associated with hypertension, these suggest that unexplained hyperuricemia could be a risk marker in patients with hypertension.

Objective

Aims of this study was to determine the role of uric acid as potential biomarker in relation to essential hypertension.

Method

This study was an observational analytic study design. 150 subjects were studied, divided into 2 groups, the first group was 100 essential hypertension patients without comorbid factors, and control group included 50 healthy subjects. Subject's age group 30-60 years. All the subject's blood pressure was measured using mercury sphygmomanometer on 3 different occasions, then serum uric acid was measured by taking blood sample and sent to the laboratory for analysis with uricase/PAP method. The data were analyzed to assess the significant correlation and difference in means of the studied variables between two different groups.

Result

The mean level of serum uric acid is significantly higher in hypertension group compared to control group (6.2 ± 1.8 vs 5.4 ± 1.4 , p-value 0.016). Serum uric

acid based on the duration of hypertension showed the difference compared to control group (<5 years: 5.8 ± 1.4 vs ≥ 5 years: 7.0 ± 2.4 , p-value 0.004). There is relationship between hypertension and uric acid level (153.8 ± 10.1 vs 118.3 ± 9.0 , p-value 0.07; 93.7 ± 7.8 vs 75.9 ± 6.3 , p-value 0.03).

Conclusion

Serum uric acid can be considered as a potential biomarker in determining the severity and duration of hypertension.

Keywords

Hypertension, Uric Acid, Hyperuricemia, Biomarker.

	Cases (Mean \pm SD)	Control (Mean \pm SD)	P-value
Systolic BP (mmHg)	153 ± 10.1	118 ± 9.0	<0.0001
Diastolic BP (mmHg)	93 ± 7.8	75 ± 6.3	<0.0001
Uric Acid	6.2 ± 1.8	5.4 ± 1.4	0.016

Serum Uric Acid Levels Based on Duration of Hypertension	Number of Patients (Total 100 Subjects)	Mean \pm SD	P-value
< 5 years	72 Patients	5.8 ± 1.4	0.004
≥ 5 years	28 Patients	7.0 ± 2.4	

Serum uric Acid	Systolic Blood Pressure	P-value
Normal Uric Acid Level	78	0.007
Hyperuricemia	22	

P018

Clear Evidence That Uncontrolled Hypertension Increases the Incidence of Acute Coronary Syndrome: A Case Report

D. Surya¹, R Handayani²

¹General Practitioner, Abdul Moeloek General Hospital, Lampung, Indonesia

²Cardiologist, Abdul Moeloek General Hospital, Lampung, Indonesia

Background

Hypertension is one of the main factors leading to atherosclerosis and the development of vulnerable plaques whose instability and rupture are responsible for acute coronary syndrome (ACS). In patients with ACS, the prevalence of antecedent hypertension varies from 46% to 63.4%.

Objective

Describe and review cases and literature regarding the relationship between hypertension and ACS.

Case Description

Man, 58 years old, came with complaints of left chest pain that radiates to the back and left arm which has been felt since 6 hours ago. The patient has a history of hypertension for a long time but it is not controlled. Examination of vital signs and physical showed an increased blood pressure, 180/100. The electrocardiogram revealed ST segment elevation at V1-V2. Laboratory examination showed an increased troponin, 2.69. The treatment of choice at the time of the emergency department is the administration of 4 tabs of Aspirin and Clopidogrel, 5 mg of Nitrate and 0,6 ml Lovenox. Then the patient is planned for Percutaneous Coronary Intervention (PCI). After the intervention, the patient's condition was stable but chest pain was still felt several times with mild pain intensity. In the inpatient room, the patient received 8 mg candesartan and 10 mg amlodipine as hypertension control drugs.

Conclusion

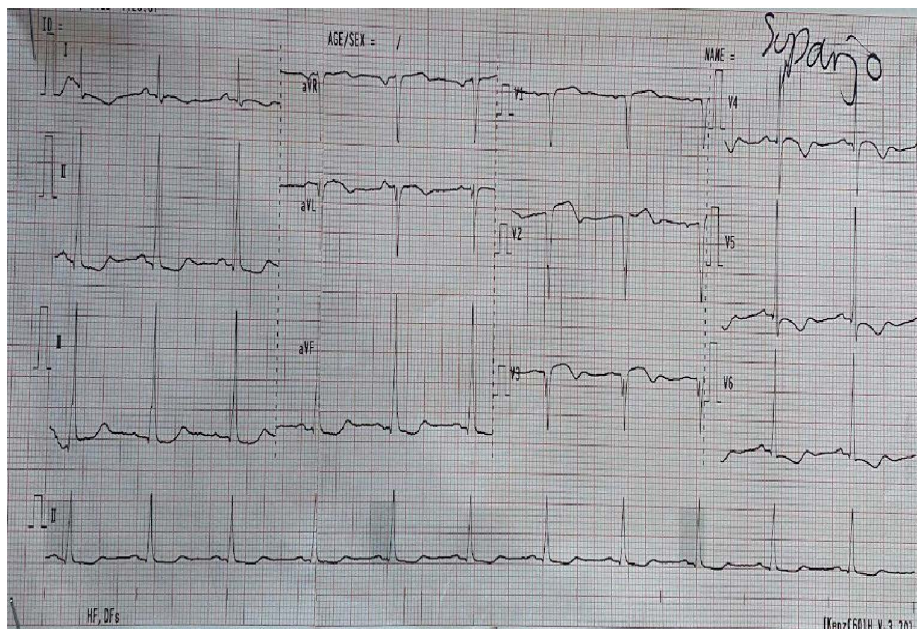
Hypertension is associated with the development of atherosclerosis which in turn contributes to progression of myocardial infarction. A chronic hypertensive state causes cardiac hypertrophy which is an independent risk factor for myocardial infarction.

Keywords

Hypertension, Acute Coronary Syndrome, ST Elevation

LAMPIRAN

EKG



P019

Is Poor Adherence to Hypertensive Treatment Associated with the Risk of Obstructive Sleep Apnea in Long Term Dialysis Patients?

[Anandita Putri^{1*}](#), [Afrilia Rosada Lubis²](#), [Riri Andri Muzasti³](#)

¹*Department of Internal Medicine, Faculty of Medicine, Universitas Sumatera Utara, Medan, North Sumatra, Indonesia*

²*Medical Program, Faculty of Medicine, Universitas Sumatera Utara, Medan, North Sumatra, Indonesia*

³*Division of Nephrology & Hypertension, Department of Internal Medicine, Faculty of Medicine, Universitas Sumatera Utara, Medan, North Sumatra, Indonesia*

*Email: ananditaputrifuadi@gmail.com

Abstract

Background

Obstructive Sleep Apnea (OSA) is one of the causes of secondary hypertension. Vast majority of secondary hypertensive patients have uncontrolled blood pressure due to poor adherence to treatment. However, the association between adherence to hypertensive treatment and the risk of OSA in long term dialysis patients remains unclear.

Objective

This study aimed to investigate the association between adherence to hypertensive treatment and the risk of OSA in long term dialysis patients.

Method

A cross-sectional study was conducted on eighty-nine hypertensive patients at the Rasyida Kidney Hospital, Medan, North Sumatra. Adherence to hypertensive treatment was measured using the Morisky Medication Adherence Scale (MMAS) questionnaire while the risk of OSA was assessed utilizing the STOP-Bang questionnaire (a tool used to help diagnose OSA). Patients' age, gender, history of smoking, and body mass index (BMI) were also analyzed as possible associated factors. The Chi-Square test and multivariate analysis were used to analyze the association between study variables.

Results

Multivariate analysis showed that older age (>50 years old) and higher BMI (>25 kg/m²) were significantly associated with high risk of OSA (OR=6.449; 95% CI= 2.246-18.520; p=0.001 and OR=6.130; 95% CI= 2.105-17.849; p=0.001, respectively). In contrary, we found no significant association between adherence to hypertensive treatment and the risk of OSA (p=0.679).

Conclusion

No association between adherence to hypertensive treatment and the risk of OSA was found in long term dialysis patients. However, being older and having higher BMI were significantly associated with higher risk of OSA in long term dialysis patients.

Keywords

obstructive sleep apnea, adherence to hypertensive treatment, long term dialysis patients.

P020

White Coat Hypertension: An Important but a Neglected Case Report

Try Wijayanthie¹, Bambang Budi Siswanto²

¹Cardiology Resident, Universitas Indonesia, Jakarta, Indonesia

²Cardiologist, National Cardiovascular Centre Harapan Kita, Jakarta, Indonesia

Background

Hypertension affects more than 1,4 billion people worldwide, in which 35% of cases are white coat hypertension. White coat hypertension is elevated blood pressure in-office blood pressure with normal out-of-office blood pressure. The aim of this case presentation is to remind the importance of detecting and managing white coat hypertension for early detection of hypertension mediated organ damage.

Case Illustration

A 60-year-old female who came to the outpatient clinic with chief complaints of chest discomfort. She has regularly consulted a cardiologist. Since mid-2021, her office blood pressure started to rise compared to home blood

pressure. Close monitoring was done to control her office blood pressure. Her routine medication, Angiotensin-converting enzyme (ACE) inhibitor (Ramipril 1x10 mg), beta-blocker (Bisoprolol 1x10 mg), and a calcium channel blocker (CCB) (Amlodipine 1x10 mg) was given to control the blood pressure. The ambulatory blood pressure monitoring (ABPM) revealed the average blood pressure is relatively well controlled compared to her increased office blood pressure measurement. Other medications which were given to this patient: Insulin Glargine Injection 1x16 UI s.c, Vildagliptin 2x50 mg p.c, Glimepiride 1x2 mg p.c. Nitrokaf Retard 2x2,5 mg, A.S.A 1x80 mg p.c, Hydrochlorotiazide 1x25 mg a.c, Atorvastatin 1x20 mg, Clopidogrel 1x75 mg, p.c. Her chest x-ray revealed a chest thoracic ratio (CTR) of 51 %, elongation of aorta segment, normal pulmonary segment, and no infiltrates nor congestion seen. ECG showed ischemia of the anterior lead. Echocardiography showed normal LV and RV systolic function, with LVEF 66%, a concentric remodeling LV with diastolic dysfunction grade I, global normokinetic, with normal function of all valves. While her coronary angiography revealed a triple vessel disease.

Conclusions

White coat hypertension supported by comparing the office blood pressure and the out-of-office blood pressure in this case, could pick up early detection of hypertension organ damage. Latest guidelines for controlling blood pressure include the use of angiotensin-converting enzyme (ACE) inhibitor, beta-blocker, and calcium channel blocker (CCB). Close monitoring of hypertensive conditions and further management is important in this case due to the existence of target organ damage evidence related to hypertension.

Keyword

white coat hypertension, office blood pressure measurement, out-of-office blood pressure measurement.

P021

Admission of Systolic Blood Pressure and Antecedent Hypertension Worsening the Short-Term Outcomes After ST-Segment Elevation Myocardial Infarction

Muhamad Rizki Fadlan, Ardani Galih Prakosa, Diah Ivana, Monica Sitio, Astrid Pramudya, Yordan Ashari

Department of Cardiology and Vascular Medicine, Faculty of Medicine, Universitas Brawijaya-dr.Saiful Anwar General Hospital, Malang East Java, Indonesia

Abstract

Background and Aim

The prevalence of antecedent hypertension varies from 46.0% to 63.4%. Until recently, many studies evaluated the prognostic significance of a previous history of hypertension in patients presented with ST-segment elevation myocardial infarction (STEMI) and came to inconsistent result. We evaluated the combined effect of admission systolic blood pressure (SBP) and antecedent hypertension on short-term outcomes in patients with STEMI.

Materials and Methods

Data were derived from Malang ACS registry of 534 consecutive patients with STEMI. STEMI within 12 hours after the onset of symptoms 2018 and 2020. The diagnosis of STEMI was followed the universal definition of myocardial infarction. Patients were divided into 4 groups according to different blood pressure status: high SBP without hypertension, high SBP with hypertension, low SBP without hypertension, and low SBP with hypertension. The primary endpoints were 30-day all-cause mortality.

Results

The prevalence of hypertension was 38.6%, and the best cutoff of admission SBP for predicting 30-day mortality was 94 mmHg by receiver-operating characteristic curve. Patients with hypertension were older, more often male, also had longer onset-to-admission time, more comorbidities, and higher Killip class. Patients with both low SBP (≤ 94 mmHg) and hypertension group had significantly higher 30-day mortality than those in other groups (all $P < 0.000$). After multivariate adjustment, low SBP with hypertension group was

still an independent risk factor for predicting 30-day mortality (hazard ratios [HR] 1.66, 95% confidence interval [CI] 1.21–2.16; $P < 0.001$). In patients with SBP > 94 mmHg, a history of hypertension could increase the risk of 30-day mortality by 17% (HR 1.06 vs 1.37, $P = 0.004$), while in patients with SBP ≤ 94 mmHg, this increased risk reached to 44% (HR 1.21 vs 2.38, $P < 0.001$).

Conclusion

Low admission SBP was the relatively dominant contributor for predicting 30-day all-cause mortality, and a concurrent antecedent hypertension increased the corresponding risk of mortality

Keyword

Hypertension, STEMI, Systolic Blood Pressure.

P022

Nighttime vs Morning Administration of Antihypertensive Drug Regimens Containing Amlodipine in Reducing 24-Hour Blood Pressure in Primary Hypertension: an Evidence-Based Case Report

[M. E. Ananta¹](#), [M. R. Fadhillah²](#), [R. I. Pratana²](#)

¹Salak Hospital Bogor, Bogor City, West Java, Indonesia

²Persahabatan Central General Hospital, Jakarta, Indonesia

Abstract

Background

Blood pressure exhibits circadian rhythm variability and generally declines during sleep. Absence or dampening of Blood Pressure (BP) decline during sleep—nondipping hypertension—are found in many hypertensive patients and are related to adverse outcomes. Nighttime administration of blood pressure lowering medications has been reported to be superior in decreasing BP compared to morning administration, owing to its effects on dipper rhythm recovery, and may potentially be a cost efficient-strategy to further reduce BP without increasing dose or number of medication.

Objective

To compare the efficacy of nighttime to morning administration of antihypertensive drug regimens containing amlodipine in patients with primary hypertension.

Method

Literature searching was conducted on four electronic databases. Randomized Controlled Trial (RCT) studies comparing the effects of administration time on 24-hour ambulatory BP in primary hypertension were included. Critical appraisal was done according to the Oxford Center of Evidence-Based Medicine Guideline 2011.

Result

Five randomized controlled trials that met the inclusion and exclusion criterias were found. In brief, four studies found 24-hour BP reduction was significantly better in nighttime compared to morning administration, while one study with few subjects did not find a significant difference in BP reduction between the two groups.

Conclusion

Administration at nighttime was correlated with better BP reduction and therefore should be considered as a cost-efficient strategy especially in resource limited settings. Its clinical significance and effects on other variables such as major endpoints should be further evaluated.

Keywords

Hypertension, amlodipine, nighttime administration, blood pressure.

P023

Non-Specific Symptoms in Hypertensive Emergency Patients with Non-STSegment Elevation Acute Coronary Syndrome: A Challenging Case in Limited Facility

I.F.D. Faratisha¹, A. Resdiani¹, E. Chandra¹

¹Kartika Kasih General Hospital, Sukabumi City, West Java, Indonesia

Background

Hypertensive emergency encompasses a spectrum of clinical presentations in which uncontrolled blood pressure leads to organ dysfunction. Hypertensive emergency is an emergency case which need appropriate and immediate treatment. Proper management of hypertensive emergency give a better outcome for the patients as well as prevent mortality and morbidity.

Case Illustration

A 53-year-old man presented with severe neck pain with a VAS score of 7/10. The patient was a smoker with history of hypertension and stroke. Blood pressure on arrival was 180/100 mmHg with a pulse of 85 bpm. ECG examination showed ST segment depression in leads I, aVL, aVF, and V4, V5, and V6 and an increase of > 1 mm in the ST segment in lead V1 and aVR. The results of echocardiographic examination showed left atrial dilatation, concentric left ventricular hypertrophy, hypokinetic basal-mid anteroseptal, inferoseptal, with preserved LV systolic function, diastolic dysfunction grade 1, and intermediate probability of pulmonary hypertension. The patient was given initial management with oral and parenteral antihypertensive drugs along with dual antiplatelet therapy and parenteral anti-coagulant. Later, the patient discharged and will be re-stratified for coronary angiography.

Conclusions

In conclusion, this case presents patient with non-specific clinical presentation of hypertensive emergency and non-ST elevation acute coronary syndrome. Despite inadequate facilities, we manage to give appropriate management for the patient. Adequate educations for blood pressure regulations is needed and become our first priority for the safety of patients.

Keyword

Hypertensive emergency, Non-ST elevation acute coronary syndrome, Non-specific clinical presentation

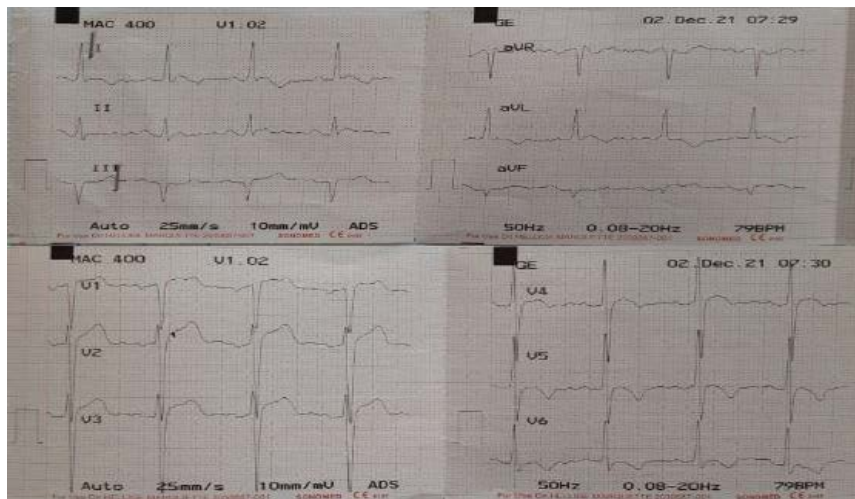


Figure 1. The electrocardiography showing several leads with ST-segment depressions and V1 and aVR lead with slightly elevation of ST-segments.

P024**Blood Pressure Diary as a Community-Based Intervention to Increase Hypertensive Patients' Perception of Treatment: a Preliminary Study**

A.B. Aryaputra¹, A.V. Putri², M. Magfirah³, N. Sulmi⁴,
N.N. Sumartono⁵

¹RSU Islam Klaten, ²RSU Astrini Wonogiri, ³Puskesmas Payabakong, ⁴RS Pendidikan Universitas Syah Kuala, ⁵Puskemas Jenangan, Indonesia

Background

Hypertension is one of global health issues that become a leading modifiable risk factor of various illnesses. As one of twelve indicators of The Healthy Indonesia Program-a family approach (PIS-PK), comprehensive hypertension

treatment is a parameter of a healthy community.

Objective

This preliminary study aim was to determine demographic profile of hypertension patients and improve patients' perceptions of hypertension treatment.

Method

In this cross-sectional descriptive study, we used patients with hypertension who reside in Panjeng village, Ponorogo, Indonesia in November 2020 as population sample. Definition of hypertension was based on the 2020 International Society of Hypertension practice guidelines. The intervention of this study was distribution of a blood pressure diary, which consists blood pressure evaluation page for each visitation as well as educational page about risk factors and management of hypertension. Healthy Family Index, a PIS-PK outcome, was used to assess the intervention's effectiveness.

Result

This study has 21 participants, with an average age of $63,3 \pm 10,5$ years, and 76,2% were female. Among those subjects, 61,9% of participants had grade 2 hypertension, 33,3 % had grade 1 hypertension, and 4,8% had normal-high blood pressure. Only 23,8% of patients were committed to taking their medicine regularly. Based on the results of the Healthy Family Index, there was a 6% rise in the indicator of adherence to treatment in patients with hypertension in the year following the intervention (36.4 % (2020) vs. 42.2 % (2021)). One of the factor that affect this result was Covid-19 pandemy, that patients may feel hesitate to visits to healthcare facility.

Conclusion

Blood pressure diary can be considered as potential community-based intervention to improve patient perception of treatment, as well as to monitor and evaluate hypertension therapy. Further and bigger-scale research is needed to determine the direct effect of this intervention to medication adherence.

P025

Hypertension and Pre-existing Comorbidities Associates With Major Adverse Cardiac Events In Coronary Artery Disease Patients Admitted To Intensive Cardiovascular Care Unit In Sanglah Hospital : The Many Faces of A Silent Killer

P.S. Upadhana¹, I.G.G. Sastrawan¹, A.T.D. Putri¹, N.L.S. Darmayanti¹, G.N.P. Jagannatha¹, A.K. Umam¹, I.W.A.S. Pradnyana¹, I.G.A.A.C, Cahyarini¹, A.R Wijaya¹, I.B.R Wibhuti²

¹Bachelor of Medicine and Medical Profession Study, Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia; ²Division of Cardiology, Sanglah General Hospital Denpasar, Faculty of Medicine, Udayana University, Denpasar, Bali, Indonesia

Background

Coronary artery disease (CAD) patients with a history of hypertension and underlying comorbidities are at high risk of developing major adverse cardiac events (MACE) and increase the mortality of the patients.

Objective

This study aims to determine the association of hypertension and MACE in CAD patients admitted to ICCU.

Method

This research is an analytic study with a cross-sectional approach. The data used is secondary data from the records of patients who were admitted to ICCU at Sanglah Hospital on 1 January 2021- 31 December 2021 with total sampling technique.

Result

There were 376 patients included in this study. The majority of patients were male (n=291,77.4%) with the median overall patient age of 58 years old. Most of MACE found in the patients were revascularization (n=113;30.1%). The prevalence of hypertension was 19.1%. There were significant differences in length of in hemoglobin (p=0.006), lymphocytes count (p=0.002), uric acid (p=0.032) and GFR (p=0.000) in the patients classified based on MACE. MACE was significantly associated with

hypertension (PR=1.285;95%CI=1.102-1.498;p=0.006). Chi-square analysis showed that stroke (PR=2.386;95%CI=1.271-4.480;p=0.007), heart failure (PR=2.533;95%CI=1.574-4.078;p=0.000), and malignant arrhythmia (PR=1.820;95%CI=1.229-2.694;p=0.004) were significantly associated with hypertension. Association of hypertension and kidney disease were significantly associated with stroke (PR= 2.386;95%CI=1.271-4.480;p=0.007), malignant arrhythmia (PR=1.820;95%CI=1.229-2.694;p=0.004) and heart failure (PR=2.533;95%CI=1.574-4.078;p=0.000). Association of hypertension and COVID-19 were also significantly associated with malignant arrhythmia (PR= 2.253;95%CI=1.309-3.877;p=0.011).

Conclusion

There were significant association between hypertension with MACE in the patients. Intervention on these factors can prevent further mortality.

Keywords

Hypertension, Major adverse cardiac events, Coronary artery disease.

P026

Correlation Between Uric Acid Level and Erectile Dysfunction in Controlled Hypertension Male Patients

[Sengkey. R¹](#), [Sugeng. C²](#), [Umboh. O²](#), [Palar. S²](#), [Moeis. E. S²](#)

¹Departement of Internal Medicine, Faculty of Medicine, Sam Ratulangi University/ Prof dr. R D. Kandou General Hospital, Manado, Indonesia

²Division of Nephrology, Department of Internal Medicine, Faculty of Medicine, Sam Ratulangi University/ Prof dr. R D. Kandou General Hospital, Manado, Indonesia

Abstract

Background

Uric acid (UA) is considered as a marker of atherosclerosis related to endothelial dysfunction, microvascular disease, and hypertension which plays a major role in erectile dysfunction (ED)

Objective

The aim of this study was to investigate whether there is correlation between UA and ED in controlled hypertension male patients.

Methods

This is an observational analytic study with cross sectional approach which has done in Kandou Hospital from October to December 2021. Data analysis was using SPSS 22. This study has been done in 40 to 60-year-old-males, married, alive wife, sexually active at least three months, controlled hypertension. Uric acid was measured by blood serum. Erectile dysfunction was scoring by the International Index of Erectile Function (IIEF-5) questionnaire. The exclusion criteria are acute illness, chronic kidney disease, diabetes mellitus, dyslipidemia, stroke, cancer, obesity, smoking, alcoholic, autoimmune disease, underwent urologic surgery, not taking UA-lowering-therapy in 3 months, having communication problem. Data analysis was using $p < 0.05$.

Result

There are 30 males. The age mean was 53.43 ± 7.45 years old. Uric-acid level mean was 6.84 ± 1.56 g/dl. There were 11 patients has mild-moderate ED with 7.85 ± 1.73 g/dl mean-UA level, 12 patients have mild ED with 6.58 ± 1.11 g/dl mean-UA level, and 7 patients has no ED with 5.67 ± 0.99 g/dl mean UA-level. Uric-acid level has significant negative correlation with IIEF-5 score in controlled hypertension male ($r = -0.506$, $p = 0.004$).

Conclusion

There is significant correlation between UA level and IIEF-5 score in controlled hypertension male patients.

Keyword

uric acid, hypertension, erectile dysfunction.

P027

An Approach to Manage a 38 Year-Old Woman with Postpartum Dyspnea

M.Sitio¹, D.Ivana¹, A.Pramudya¹, M.RFadlan¹, A.Galih¹,
C.T.Tjahjono²

¹Brawijaya Cardiovascular Research Center, Cardiovascular Center, Universitas Brawijaya, Saiful Anwar Hospital, Malang, Indonesia

²Department of Cardiology and Vascular Medicine, Saiful Anwar Hospital, Malang, Indonesia

Background

Peripartum cardiomyopathy (PPCM) is characterized by congestive heart failure and left ventricular dysfunction toward the end of pregnancy or in the months after delivery, in the absence of other identifiable underlying cardiac diseases. It is a life-threatening condition which frequently inadequately treated. This case report aims to describe the importance of early diagnosis and treatment in PPCM.

Case illustration

A 38 year-old woman was admitted to the hospital because of dyspnea on the 15th day postpartum. Fifteen days before admission, the patient went into labor at 39 weeks of gestation. A cesarean section was performed electively without complications and the infant was healthy. The patient returned home on the fourth day postpartum. She remained well until approximately 6 days before admission, when gradually increasing orthopnea and dyspnea on exertion developed along with mild leg edema. Two days before admission, intermittent substernal chest tightness developed, accompanied by nausea, vomiting, and cough. There was no complaint of fever and chills. On the following day, the complaints worsened and she was hospitalized. On examination, the blood pressure was 150/94 mm Hg, heart rate of 125 beats per minute, respiratory rate of 26 breaths per minute, and the oxygen saturation of 98% on room air. An electrocardiogram showed sinus rhythm at 130 beats per minute. Chest x-ray revealed cardiomegaly with pulmonary congestion. Echocardiography findings revealed reduced ejection fraction of left ventricular systolic function, fractional shortening of 11%. Left atrial and ventricle appeared enlarged and diffusely hypokinetic. The findings revealed the diagnosis of PPCM. She was treated with diuretic, aldosterone antagonist,

ACE-i, beta blocker, anticoagulant, and bromocriptine. The symptoms were improved in the following days and the patient was discharged in a good condition.

Conclusion

Rapid and precise clinical judgment assisted by appropriate objective examinations are compulsory to establish diagnosis and benefit the patient.

Keywords

peripartum cardiomyopathy, heart failure.

P028

Profile of Hypertension in Young Adult Patient in Malang City, Indonesia

D.I. Sari^{1,2}, M.R. Fadlan^{1,2}, M. Sitio^{1,2}, A.A. Pramudya^{1,2},
A.G. Prakosa^{1,2}

¹Department of Cardiology and Vascular Medicine, Faculty of Medicine, Brawijaya University

²dr.Saiful Anwar General Hospital, Malang East Java, Indonesia

Background and aims

Hypertension is a serious medical condition that significantly increases the risks of heart, brain, kidney and other diseases. An estimated 1.28 billion adults aged 30-79 years worldwide have hypertension, but 46% of adults with hypertension are unaware that they have the condition. This study intended to provide and present data as an insight for appropriate management of hypertension in young adult.

Materials and methods

A cross-sectional study was conducted at the Islamic senior high school in Malang City. A total 678 young adult between the ages of 15 until 30 years old were reviewed. Data collected from questionnaire, include demographic, clinical, investigation and causes of hypertension.

Results

From a total 678 young adult, 110 have increased blood pressure whereas

56% were females. Out of 110 hypertensive young adults reviewed, 21% had a secondary cause and 79% had essential hypertension. The young adult with hypertension evidently had a family history of hypertension in a first degree relative (73%), mostly was a current or previous smokers (32%) and 0.1% admitted to prior use of metamphetamines. Comorbidities present were diabetes in 6% patients, metabolic syndrome in 12%, and obesity in 24%. Most patients had essential hypertension with a strong family history. High risk behavior, including smoking and illicit drug use, and obesity were identified as contributing factors.

Conclusions

Hypertension is often found among young adult in Malang that needs more concern in managing hypertension comprehensively. These results suggest a targeted approach to the investigation of young hypertensives for secondary causes, and significant opportunities for lifestyle intervention.

Keywords

hypertension, young adult.

P029

HYPERTENSION WITH NON-HEMORRHAGIC STROKE IN UNIVERSITAS KRISTEN INDONESIA GENERAL HOSPITAL

Suling, FRW^{1,2}; Tatriatmadja, ZAR^{1,2}; Florence, E³; Rantung, NOH^{1,2}; Chandramin^{1,2}; Puspitasari, F^{1,2}

¹Division of Cardiovascular Medicine, Department of Internal Medicine, Faculty of Medicine, Universitas Kristen Indonesia, Jakarta, Indonesia

²Division of Cardiovascular Medicine, Universitas Kristen Indonesia General Hospital, Jakarta, Indonesia

³Faculty of Medicine, Universitas Kristen Indonesia, Jakarta, Indonesia

Background

Hypertension is a significant public health problem. It is estimated that 1.13 billion people suffer from hypertension worldwide. In Indonesia, hypertension is the first rank of a non-communicable disease with the number of cases reaching 185,857 in 2018. One of the main complications of hypertension is stroke. Stroke is a common neurological disease that is in the form of focal and

global neurological deficits. Stroke is divided into non-hemorrhagic (ischemic) and hemorrhagic.

Objectives

This study evaluates hypertensive patients with Non-Hemorrhagic Stroke at the Universitas Kristen Indonesia (UKI) General Hospital, Jakarta.

Methods

The population was hypertensive patients with non-hemorrhagic stroke, both inpatient and outpatient at the UKI General Hospital Period 1 January - 31 March 2019. The research design used a descriptive qualitative cross-sectional with secondary data from medical records. Hypertension Criteria based on Joint National Committee VIII.

Results

In this study, 30 samples were obtained that met the inclusion criteria in the UKI general hospital from 1 January 2019 - 31 March 2019. The most stage 2 hypertension, 11 patients (36.7%), for the most age regardless of gender, age 56-65 years 14 patients (43.3 %), based on body mass index the most obesity type 1 as many as 16 patients (53.3%). The first time attack was on 23 patients (76.7 %). Most comorbid were 10 patients with diabetes (33.3%).

Concolusion

Stroke is one of the most common complications of hypertension in addition to coronary heart disease. For this reason, it is still necessary to carry out early prevention from health facilities, especially the first level so that the incidence of stroke does not increase.

Keywords

Hypertension, Non-Hemorrhagic stroke, JNC VIII.

P030

FRUITS AND VEGETABLES INTAKE AND RISK OF HYPERTENSION: A META-ANALYSIS OF PROSPECTIVE COHORT STUDIES

Ismini Aufa Kamilia¹, Yusra Pintaningrum¹

¹Medical Professional Student, Mataram University

²Departement of Cardiovascular, Mataram University and West Nusa Tenggara Central Hospital

Background

The association between fruit and vegetables (FVs) intake and hypertension risk remains controversial. Many studies have indicated that consumption of vegetables and fruits are positively associated with blood pressure.

Objective

To evaluate the impact of intake fruits and or vegetables and the risk of developing hypertension.

Methods

Prospective cohort studies were performed through PubMed. There were three studies included with total 146,647 participants were included.

Result

here was statistically significant between fruits intake and risk of hypertension (RR 0.87, 95% CI 0.83 to 0.91, $p=0.00001$), vegetables intake and risk of hypertension (RR 1.08, 95% CI 0.99 to 1.18, $p=0.08$).

Conclusion

There were statistically significant between fruits and vegetables intake and risk of hypertension. These findings support recommendation to increase the consumption of fruit and vegetables to prevent the risk of developing hypertension.

Keyword

Fruit, vegetable, risk of hypertension.

P031

Characteristics and mortality in hypertensive COVID-19 patients at a district hospital in North Jakarta: a cross-sectional study

Tantika Andina¹, Marcel HR Sibarani²

¹General Practitioner, Tugu Koja District Hospital, Jakarta

²Internal Medicine Department, Tugu Koja District Hospital, Jakarta

Abstract

Background

The characteristics and clinical course of Coronavirus disease 2019 (COVID-19) patients treated in a district hospital, particularly those with comorbidities like hypertension, may differ from patients who were treated in a tertiary hospital. A better understanding of the characteristics and clinical courses of those patients is necessary to establish an optimal management strategy.

Objective

This study aims to describe the characteristics and to identify the predictors of mortality in hypertensive COVID-19 patients in a district hospital in North Jakarta.

Method

A cross-sectional study was conducted on 192 hypertensive COVID-19 patients admitted between January and November 2021. Exclusion criteria were pregnancy and referral to another center. Demographic and clinical characteristics of the patients were obtained by reviewing medical records. Binary logistic regression analysis was performed to evaluate the associations between mortality and age, sex, comorbidities such as diabetes mellitus, heart disease, chronic kidney disease (CKD), cerebrovascular disease and pulmonary tuberculosis as well as C-reactive protein (CRP), D-dimer level at admission. The cut-off value of CRP and D-dimer level associated with mortality were determined using ROC analysis.

Results

Hypertensive COVID-19 patients were mostly male with an average age of 56.6 years (standard deviation 10.9). Mild, moderate, severe, and critical COVID-19

were found in 23.4%, 23.4%, 35.9%, and 17.2% of the patients, respectively. The majority of the participants (55.2%) had at least one comorbidity other than hypertension. The overall mortality rate was 15.1%. Heart disease (odds ratio 4.01, 95% CI 1.11 to 13.9; $p = 0.029$), CKD (OR 10.41, 95% CI 2.12 to 51.13; $p = 0.004$) and an elevated CRP level (OR 10.98, 95% CI 3.32 - 36.32; $p < 0.001$) were associated with a higher risk of mortality in hypertensive COVID-19 patients.

Conclusion

Hypertensive COVID-19 patients had a high frequency of comorbidities and similar clinical characteristics to those reported elsewhere. Hypertensive COVID-19 patients with heart disease, CKD, and elevated CRP levels were at higher risk of mortality and therefore may benefit from more aggressive therapy.

P032

CHARACTERISTICS OF HYPERTENSION IN OUTPATIENT SARI DHARMA CLINIC DENPASAR BALI

[Dewa Ayu Rina Wiana Dewi¹](#), [Ida Bagus Aditya Nugraha²](#)

¹General Practitioner at Sari Dharma Outpatient Clinic Denpasar Bali, ²Internist at Sari Dharma Outpatient Clinic Denpasar Bali

Abstract

Background

Prevalence of hypertension (HT) in outpatient clinic remains high and increasing overtime, especially in Asian. The mortality higher among those people, hence hypertension is a leading cause of many morbidities such as type 2 diabetes mellitus, cardiovascular event, and end stage renal disease.

Objective

The purposes of this study is to determine the characteristics among HT patient in outpatient Sari Dharma Clinic Denpasar Bali.

Method

We performed cross-sectional study with all HT patients >18 years old. The data were collected from medical record since August 2021-Januari 2022. The

diagnosis was made based on NKF-KDOQI 2021 if blood pressure > 140/90.

Result

114 patients were included. We found 47 (41,2%) were male and 67 were female (58,8%), 63 (55,3%) were obese and 51 (44,7%) normal. About 54 sample (47,4%) take 1 tablet and 60 (52,6%) sample take combination anti-hypertensive drug. Approximately 62,3% patients have HT with comorbidity and 37,7% without comorbidity. The mean of age was 54.86 years old and mean arterial blood pressure was 102,29 mmHg, the mean of systolic blood pressure was 141.36 mmHg and diastolic blood pressure was 82.75 mmHg.

Conclusion

In summary, this study showed that patient with hypertension tends to have comorbidities. Female was the most likely to have hypertension. The majority of patient used combination anti-hypertensive agents. This study may be use as primary data for analytical studies about correlation of HT and some of risk factor.

Keywords

Characteristic, Hypertension, Outpatient, Sari Dharma Clinic.

Blood pressure During Infection and Serum Creatinine Concentrations Predict Severe Disease in Covid-19

I Gde Raka Widiana, I Made Bagiada and [Wira Mahandita](#)

Department of Internal Medicine Medical Faculty University of Udayana / Sanglah General Hospital Denpasar Bali

Abstract

The severe of Covid-19 infection may associated with blood pressure and abnormality of kidney function. These abnormalities may contribute to the pathogenesis of severe Covid-19 infection.

This study aims to determine blood pressure during infection and creatinine concentrations are able to predict the severity of Covid-19 infection.

An observational analytical study was done at Sanglah Hospital during June to August 2021, using secondary data from hospital data system. Diagnosis of Covid-19 infection was made based of clinical and PCR positive of Covid-19. Data of patients was taken from blood test results at admission. SCAP was used for determination of disease severity, score ≥ 10 is defined as severe Covid-19 infection.

During the study 131 patients were included consisted of 77(58.8%) males and 54(41.2%) females. As many as 65 (49,6%) among 131 Covid-19 patients had severe disease (SCAP score 10 or more) with median SCAP score 10 (interquartile range 5-14. History of Hypertension were suffered by 57(43,5%), and Reduced kidney function were 65(49,6%) of the patients. At admission, patient with history of hypertension were significantly had higher (126 vs 113 mmHg; $p < 0.001$) systolic BP than without history of hypertension, however there were negative significant association between systolic blood pressure during the disease and SCAP score ($r = -0.14$; $p = 0.04$), and positive significant creatinine levels ($r = 0.33$; $p < 0.001$) with SCAP score. Using logistic regression analysis, it was found that during the disease, every ten mmHg reduction of SBP increases risk by (100%-87%,) =13% and every single unit (mg/dL) increased of serum concentrations increases (172%-100%)= 72% of severe Covid-19 patients .


In conclusion, systolic blood pressure during infection and serum creatinine concentrations predict severe covid-19 infection.

Keywords


blood pressure - creatinine concentration - SCAP score - severe disease - Covid-19.

ISBN 978-623-99494-1-9



 (62-21) 573.4978

 scientific@inash.or.id

 inash@inash.or.id

 @inash_hipertensi

 InaSH Channel