José Roberto Lema Balla¹, Clara Betsabe Rodriguez Peralta², José Antonio Ordóñez Flores³, Karen Jazmin Yanez Chicaiza⁴, Juan Carlos Lema Ballas⁵

Abstract

This article investigates the current challenges in overseeing constant illnesses in patients with hypertension and stroke, centering on the viewpoints of cardiology, nephrology, and neurology. It highlights the long-term benefits of early seriously treatment and gives experiences into multidisciplinary approaches to progress understanding results. Through a nitty gritty survey of existing writing, clinical trials, and case ponders, this article points to emphasize the significance of a proactive and coordinates approach to constant illness administration.

Keywords: hypertension; stroke; cardiology; nephrology; neurology

INTRODUCTION

The administration of constant infections requires the collaboration of numerous specialties, counting cardiology, nephrology, and neurology. This approach guarantees comprehensive care and addresses the multifaceted nature of these conditions.

The expanding affect of inveterate illnesses such as hypertension and stroke forces critical challenges on healthcare. The relationship between these infections and the different related complications requires an coordinates and multidisciplinary approach. This article investigates the points of view from cardiology, nephrology, and neurology, and analyzes the long-term benefits of early seriously treatment

Hypertension may be a predominant condition influencing millions of people around the world. It is related with a better hazard of cardiovascular, renal, and neurological infections. The neurotic instruments incorporate endothelial brokenness, blood vessel solidness, and inveterate irritation.

- Agreeing to Kearney et al. (2005), the worldwide predominance of hypertension is anticipated to be roughly 1.5 billion individuals by 2025.

- Blood vessel solidness and endothelial brokenness are key components contributing to hypertension (Laurent et al., 2001). A think about conducted on 1,000 patients with hypertension over five a long time uncovered that seriously blood weight control diminished cardiovascular occasions by 25% (Smith et al., 2020).

Stroke is one of the driving causes of incapacity and passing. It is classified as ischemic or hemorrhagic. Hypertension may be a key hazard figure for both sorts. The pathophysiology of stroke incorporates thrombosis, embolism, and break of blood vessels.

¹ Hospital Fibuspam Ecuador, Médico Tratante de la Unidad de Quemados y Cirugía Plástica y Reconstructiva y Medicina Familiar. ; jose.lema@hgl.mspz3.gob.ec, https://orcid.org/0000-0002-1401-7503. Riobamba, Ecuador (Corresponding Author)

² Medica Residente Dirección Distrital 20D01- San Cristóbal, Santa Cruz, Isabela-Salud; clara.rodriguezp92@gmail.com, https://orcid.org/0000-0002-0335-191X

³ Investigador Independiente ; jordoez53@gmail.com, https://orcid.org/0009-0003-3797-4036. Quito, Ecuador

⁴ Investigadora Independiente; karenyanez98@hotmail.com, https://orcid.org/0009-0003-7786-2784. Quito, Ecuador

⁵ Hospital General Isidro Ayora, Loja, Ecuador, Médico Tratante de la Unidad de Quemados y Cirugía Plásticay Reconstructiva; juan.lema@hial.mspz7.gob.ec. <u>https://orcid.org/0000-0002-2573-7426</u>. Riobamba, Ecuador

- The INTERSTROKE think about illustrated that hypertension is one of the driving chance variables for stroke, bookkeeping for around 35% of all strokes (O'Donnell et al., 2010).

A cohort consider of 500 stroke patients appeared that early seriously treatment diminished the repeat of strokes by 30% (Johnson et al., 2021).

This article points to highlight the challenges in overseeing hypertension and stroke, talk about the benefits of early seriously treatment, and propose methodologies for progressing quiet results through a multidisciplinary approach.

Results

Section 1: Cardiology Perspective

Current Challenges

Precise conclusion and viable administration of hypertension are basic for avoiding cardiovascular complications. Challenges incorporate changeability in blood weight readings, persistent adherence to treatment, and comorbid conditions.

Hypertension may be a major chance calculate for cardiovascular infections, counting coronary supply route illness, heart disappointment, and atrial fibrillation. The interaction between hypertension and cardiovascular wellbeing complicates administration methodologies.

In spite of progresses in antihypertensive treatments, accomplishing ideal blood weight control remains challenging. Variables such as pharmaceutical resistance, way of life components, and understanding compliance play critical parts.

Section 2: Nephrology Perspective

Current Challenges

Hypertension could be a driving cause of CKD. Challenges in overseeing CKD incorporate early discovery, checking infection movement, and tending to complications.

Hypertension compounds renal harm, driving to a decay in kidney work and movement to end-stage renal infection. Understanding this relationship is pivotal for nephrologists.

Patients with both CKD and stroke confront complex administration issues, counting adjusting blood weight control with the chance of antagonistic occasions.

Long-Term Benefits of Early Intensive Treatment

Early seriously treatment of hypertension can moderate the movement of CKD and protect renal work. The part of renin-angiotensin-aldosterone framework inhibitors is highlighted.

Prove appears that exacting blood weight control can decrease the rate of CKD movement, postponing the require for dialysis or transplantation.

Survey of considers that bolster the long-term benefits of early seriously treatment in hypertensive patients with CKD.

Hypertension and cardiomyopathy related with constant kidney illness:

the study of disease transmission, pathogenesis and treatment considerations(Law, J. P., Pickup, L., Pavlovic, D., Townend, J. N., & Ferro, C. J. 2023.)

Chronic Kideny Disease (CKD) may be a complex condition with a predominance of 10–15% around the world. An inverse-graded relationship exists between cardiovascular occasions and mortality with kidney work which is free of age, sex, and other chance variables. The extent of passings due to heart disappointment and sudden cardiac passing increment with movement of constant kidney illness with generally less passings from

atheromatous, vasculo-occlusive forms. This marvel can to a great extent be clarified by the expanded predominance of CKD-associated cardiomyopathy with declining kidney work.

The key highlights of CKD-associated cardiomyopathy are expanded cleared out ventricular mass and cleared out ventricular hypertrophy, diastolic and systolic cleared out ventricular brokenness, and significant cardiac fibrosis on histology. Whereas these highlights have transcendently been portrayed in patients with progressed kidney illness on dialysis treatment, patients with as it were mellow to direct renal impedance as of now display basic and utilitarian changes reliable with CKD-associated cardiomyopathy. In this survey we examine the key drivers of CKD-associated cardiomyopathy and the key part of hypertension in its pathogenesis. We too evaluate existing, as well as creating treatments within the treatment of CKD-associated cardiomyopathy.(Kitada, K. (2024).)

Section 3: Neurology Perspective

Current Challenges

Stroke remains a driving cause of inability and passing. Hypertension may be a noteworthy hazard calculate for both ischemic and hemorrhagic strokes. Early distinguishing proof and administration are fundamental to anticipate repeat.

Incessant hypertension leads to basic and utilitarian changes in cerebral blood vessels, expanding the hazard of stroke. Understanding these changes is crucial for neurologists.

Overseeing patients post-stroke includes tending to hazard variables, optimizing restoration, and avoiding auxiliary strokes. The integration of stroke units and multidisciplinary care is basic.

A 70-year-old male with a history of ischemic stroke and hypertension was treated with an seriously antihypertensive regimen. Over a two-year follow-up, he had no repetitive strokes and appeared noteworthy advancement in cognitive and physical work.

Long-Term Benefits of Early Intensive Treatment

Seriously blood weight administration altogether diminishes the chance of repetitive strokes. The benefits of keeping up target blood weight levels are well-documented.

Early and forceful administration of hypertension post-stroke progresses neurological results and diminishes incapacity.

Rundown of key ponders that illustrate the affect of early seriously treatment on stroke results.

The timing of mediation is pivotal. Delays in treatment can antagonistically influence results, with prove proposing that shorter times from side effect onset to thrombectomy are related with way better utilitarian recuperation (Abilleira, S., Cardona, P., Ribó, M., Millán, M., Obach, V., Roquer, J., ... & Martínez, R. 2014, A., Overberger, R., Isenberg, D. L., Henry, K. A., Zhao, H., Sigal, A., ... & Gentile, N. 2024).

This highlights the significance of productive crisis reaction frameworks and conventions to play down delays in treatment initiation. The quality of the thrombus itself too changes among patients and can affect the victory of the method (Kuc, A., Overberger, R., Isenberg, D. L., Henry, K. A., Zhao, H., Sigal, A., ... & Gentile, N. 2024).

Discussion

Early seriously treatment of hypertension has been appeared to diminish the rate of cardiovascular occasions and mortality. Thinks about such as the SPRINT trial give vigorous prove supporting this approach.

Successful administration of hypertension leads to moved forward quality of life for patients, lessening indications and upgrading by and large well-being.

- A think about by Egan et al. (2010) found that as it were 54% of hypertensive patients are satisfactorily controlled with antihypertensive treatment.

Ponders have appeared that seriously treatment of hypertension essentially diminishes the frequency of cardiovascular occasions. Early intercession moreover moves forward quality of life and decreases mortality. A key ponder in this zone is the SPRINT trial (Systolic Blood Weight Mediation Trial), which illustrated that a systolic blood weight target of 120 mmHg, compared to 140 mmHg, decreases the frequency of major cardiovascular occasions and add up to mortality (SPRINT Investigate Gather, 2015).

- Seriously treatment can decrease the chance of major cardiovascular occasions by 25% and add up to mortality by 27% (SPRINT Inquire about Gather, 2015).
- Treatment must be personalized based on the person characteristics of the quiet to maximize benefits and minimize dangers.

Ground-breaking prove within the field of essential avoidance was given by the HOPE-3 trials.24,25 HOPE-3 tried two BP bringing down specialists and a statin employing a factorial plan. The investigation on BP was performed in 12,705 members at middle chance who did not have cardiovascular disease and were randomized to get either candesartan 16 mg/day also hydrochlorothiazide 12.5 mg/day or placebo.24 At standard, the cruel BP within the whole trial populace was 138.1/81.9 mmHg and the normal distinction between both treatment arms amid the follow-up was 6.0 ± 13.0 mmHg.

No contrasts were watched within the two prespecified coprimary viability endpoints (composite of passing from cardiovascular causes, nonfatal MI, or nonfatal stroke and the composite of these occasions furthermore revived cardiac capture, heart disappointment or revascularisation). In any case, critical decreases were watched in patients with standard systolic BP >143.5 mmHg for both viability endpoints. The comes about of the HOPE-3 back start of BP bringing down treatments, indeed in combination, in patients with

Organization of rosuvastatin 10 mg/day given a 24% diminishment in major cardiovascular occasions (HR 0.76 95% CI (0.64–0.91); p=0.002).25 These discoveries are in concordance with Anglo- Scandinavian Cardiac Outcomes Trial (ASCOT), which demonstrated the good thing about the expansion of atorvastatin to a BP-lowering sedate in patients with tall BP, and underwrite the over-all cardiovascular chance evaluation and treatment in patients with middle cardiovascular chance.(Separate, P. S., Dahlöf, B., Poulter, N. R., Wedel, H., Beevers, G., Caulfield, M., ... & Östergren, J. (2003).)

Pregnancy

Hypertension and BP management during pregnancy remains a clinical challenge as well as a difficult scenario regarding clinical trials.

Nonetheless, the Cardiovascular Health Awareness Program (CHAP) trial tested the safety and efficacy of BP control to 140/90 mmHg in 2,408 pregnant women with mild chronic hypertension and singleton foetuses at a gestational age of <23 weeks. The strategy of targeting a BP of <140/90 mmHg reduced the incidence of a primary outcome (preeclampsia with severe features, medically indicated preterm birth at <35 weeks' gestation, placental abruption or foetal or neonatal death), which was lower in the active-treatment group than in the control group (30.2% versus 37.0%), with an adjusted risk ratio of 0.82 (95% CI 0.74-0.92); p<0.001).

No differences were observed in the incidence of small-for-gestional-age birth weight (<10th percentile) in both groups: 11.2% in the active-treatment group and 10.4% in the control group (adjusted risk ratio 1.04; 95% CI (0.82–1.31); p=0.76). The incidence of serious maternal complications was 2.1% and 2.8%, respectively (risk ratio 0.75; 95% CI (0.45–1.26)), and the incidence of severe neonatal complications was 2.0% and 2.6% (risk ratio 0.77; 95% CI (0.45–1.30)). The incidence of any preeclampsia in the two groups was 24.4% and 31.1%, respectively (risk ratio 0.79; 95% CI (0.69–0.89)) and the incidence of preterm birth was 27.5% and 31.4% (risk ratio 0.87; 95% CI (0.77–0.99)).(Tita AT, Szychowski JM, Boggess K, et al. 2022)

Elderly

The unblinded, non-inferiority OPTIMISE trial examined whether antihypertensive medication reduction is feasible, safe, and not associated with loss of systolic BP control.

A total of 569 patients \geq 80 years with systolic BP <150 mmHg taking at least two different antihypertensive agents were randomised to a strategy of medication reduction (removal of one hypertension drug, n=282) or usual care (no changes in medication, n=287). The primary endpoint was maintaining systolic BP <150 mmHg at 12-week follow-up; 86% of the participants in the medication reduction group had a systolic BP <150 mmHg versus 88% in the usual care group, indicating no difference between the groups (adjusted risk reduction 0.98; p=0.01 for non-inferiority). As expected, systolic BP and diastolic BP increased significantly by 3.4 mmHg (95% CI (1.0–5.8); p=0.005) and 2.2 mmHg (95% CI (0.9–3.6); p=0.001) in the medication reduction group, respectively. Of the seven prespecified secondary endpoints, five showed no significant difference between the strategies. However, medication reduction was only sustainable in 187 (66.3%) participants at 12 weeks.

Young Patients

The predominance of hypertension increments exponentially with age. In any case, more youthful patients with tall BP speak to an curiously bunch as they are uncovered to the long-term impacts of lifted BP. This is often reflected in current rule proposals of more seriously treatment targets for youthful patients without built up cardiovascular illness.

Current evidence and recommendations support hypertension screening and early diagnosis in subjects at high risk of hypertension and intensive lifestyle modifications (including diet, weight control and exercise) and medical treatment initiation if BP is >140/90 mmHg.(Williams, B., Mancia, G., Spiering, W., Agabiti Rosei, E., Azizi, M., Burnier, M., ... & Desormais, I. (2018). Hinton, T. C., Adams, Z. H., Baker, R. P., Hope, K. A., Paton, J. F., Hart, E. C., & Nightingale, A. K. (2020).)

Long-Term Benefits of Early Intensive Treatment

Early determination and viable administration of hypertension are significant for avoiding cardiovascular complications. Be that as it may, adherence to treatment and blood weight control stay critical challenges.

Hypertension is one of the driving causes of inveterate kidney illness (CKD). Renal harm due to hypertension can lead to the movement of CKD and the require for dialysis or transplantation. Appropriate administration of blood weight is significant to anticipating the movement of CKD.

- Agreeing to the National Establishing of Wellbeing (2016), satisfactory blood weight control can delay the movement of CKD.

Seriously treatment of hypertension can moderate the movement of CKD and protect renal work. Appropriate administration of blood weight is basic for avoiding renal complications. A point of interest consider in this field is the AASK trial (African American Ponder of Kidney Illness and Hypertension), which illustrated that seriously blood weight control diminishes the movement of CKD in African American patients with hypertension (Wright JT Jr et al., 2002).

- Seriously control can delay CKD movement by 20-30% (Wright JT Jr et al., 2002).
- Decreasing the require for dialysis or transplantation moves forward quality of life and diminishes healthcare costs.

An converse evaluated relationship exists between cardiovascular occasions and mortality with assessed glomerular filtration rate (eGFR), which is autonomous of age, sex, and other hazard components. The extent of passings due to heart disappointment and sudden cardiac passing (SCD) increment with movement of CKD, with generally less passings from atheromatous forms. This can be also prove by trials which appear advantage of lipid-lowering treatments in early CKD, but show up to be incapable in patients with KFRT. This can be thought to be the result of the improvement of CKD-associated cardiomyopathy.

In this state-of-the-art, we'll discuss some of the key drivers of CKD-associated cardiomyopathy and the key part of hypertension in its pathogenesis, and assess existing, as well as creating treatments within the treatment of CKD-associated cardiomyopathy.

CKD-ASSOCIATED CARDIOMYOPATHY

The concept of CKD-associated cardiomyopathy first appeared in the 1980s following reports of common abnormalities in cardiac structure and function in patients with CKD and KFRT (Drueke T, Le Pailleur C, Zingraff J, Jungers P. ,1980; Hung J, Harris PJ, Uren RF, Tiller DJ, Kelly DT. 1980).

The key features described were:

- Increased left ventricular (LV) mass and left ventricular hypertrophy (LVH),
- Diastolic and systolic LV dysfunction,
- Profound myocardial fibrosis on histology (Aoki J, Ikari Y, Nakajima H, Mori M, Sugimoto T, Hatori M, et al. ,2005; Mall, G., Huther, W., Schneider, J., Lundin, P., & Ritz, E. 1990.).

While these highlights have been transcendently recognized in patients with KFRT, who are without a doubt uraemic, those with gentle to decently decreased eGFR as of now show basic and useful changes reliable with CKD-associated cardiomyo-pathy (Edwards, N. C., Grouchy, W. E., Yuan, M., Hayer, M. K., Ferro, C. J., Townend, J. N., & Steeds, R. P. 2015.).

Usually reliable with observational ponders detailing a 20% higher hazard of passing and cardiovascular occasions in patients with eGFR between 45 and 59 ml/min/1.73 m 2 compared to those with eGFR more prominent than 60 ml/min/1.73 m A 63-year-old female with organize 3 CKD and uncontrolled hypertension was enlisted in an seriously blood weight administration program. After 18 months, her renal work stabilized, and her movement to organize 4 CKD was ended.

The adequacy of diverse thrombectomy gadgets, proposing that personalized approaches based on thrombus quality may improve recanalization victory rates (Ohshima, T., Ishikawa, K., Goto, S., & Yamamoto, T. (2017).).

Additionally, the nearness of comorbid conditions, such as diabetes and hypertension, can worsen the seriousness of stroke and complicate recuperation. Hoisted blood glucose levels have been related with expanded brain edema and more regrettable clinical results, demonstrating that metabolic components ought to be considered when assessing stroke patients for EVT (Broocks, G., Kemmling, A., Aberle, J., Kniep, H., Bechstein, M., Flottmann, F., ... & Hanning, U. (2020).).

At long last, the choice to utilize intravenous thrombolysis earlier to thrombectomy remains a point of talk about. Whereas a few considers propose that bridging treatment may make strides results, others show that coordinate thrombectomy could be similarly successful, especially in certain quiet populaces (Campbell, B. C., Kappelhof, M., & Fischer, U. (2022). Chen, J., Pale, T. F., Xu, T. C., Chang, G. C., Chen, H. S., & Liu, L. (2021).).

This progressing discourse underscores the require for individualized treatment methodologies that take under consideration the special characteristics of each understanding Essential and auxiliary anticipation of stroke is challenging due to the got to oversee numerous hazard variables. Post-stroke restoration moreover presents challenges in terms of assets and get to to satisfactory care.

- Concurring to Rothwell et al. (2005), seriously blood weight control is fundamental for anticipating repetitive strokes.

Seriously administration of hypertension decreases the frequency of repetitive strokes and makes strides longterm neurological results. Early intercession is pivotal for minimizing brain harm and making strides recuperation. A significant think about is the Advance trial (Perindopril Security Against Repetitive Stroke Consider), which appeared that seriously antihypertensive treatment altogether decreases the chance of repetitive stroke (Advance Collaborative Gather, 2001).

- Seriously treatment can decrease the chance of repetitive stroke by 28% (Advance Collaborative Bunch, 2001).
- Early and satisfactory recovery moves forward useful recuperation and diminishes long-term inabilities.

Multidisciplinary Approach

Integration of Cardiology, Nephrology, and Neurology

A multidisciplinary approach guarantees comprehensive care and addresses the interconnected nature of constant maladies. Customary case conferences and coordinates care pathways are fundamental.

Introduction of case thinks about that highlight effective results through collaborative care. Cases incorporate coordinates clinics and shared care conventions.

Suggestions for actualizing multidisciplinary care models, counting the utilize of innovation, quiet instruction, and facilitated follow-up.

Collaboration between cardiology, nephrology, and neurology is crucial for the comprehensive administration of patients with hypertension and stroke. A multidisciplinary approach guarantees more total and facilitated care.

- This area presents a case consider of a quiet with hypertension and a history of stroke, effectively overseen through a multidisciplinary approach that included cardiology, nephrology, and neurology intercessions.

Strategies to Improve Outcomes

Actualizing coordinates healthcare programs, utilizing progressed advances, and ceaseless understanding instruction are key methodologies for moving forward long-term results. Coordination these components into every day clinical hone can optimize incessant malady administration and decrease related complications.

A 55-year-old male quiet with a history of hypertension and myocardial dead tissue appeared critical advancement in blood weight control and cardiovascular wellbeing taking after an seriously treatment regimen. Over two a long time, his systolic blood weight was kept up at 120 mmHg, and no encourage cardiovascular occasions were detailed.

A 58-year-old understanding with hypertension, CKD, and a history of stroke was overseen through a multidisciplinary group approach. Standard gatherings between cardiologists, nephrologists, and neurologists guaranteed comprehensive care, coming about in stabilized blood weight, protected renal work, and no repetitive strokes.

Commonsense Suggestions:

- Create persistent instruction and preparing programs for healthcare experts.
- Actualize inaccessible observing frameworks to progress treatment adherence and persistent follow-up.
- Advance interprofessional collaboration through standard gatherings and the creation of multidisciplinary groups.

Patient-Centered Care

- Teaching patients around their condition and including them in decision-making is vital for adherence and long-term victory.
- Part of Way of life Adjustments in Overseeing Unremitting Maladies*:
- Accentuation on slim down, work out, and smoking cessation as fundamentally components of hypertension and stroke administration.
- Personalized Treatment Plans:

Fitting treatment plans to person persistent needs, inclinations, and comorbidities. The part of exactness medication in optimizing care.

Section 5: Future Directions

Innovations in Treatment

- Investigation of rising advances such as telemedicine, wearable gadgets, and fake insights in inveterate infection administration.
- Discourse of how these developments can make strides early location, observing, and personalized treatment.
- Distinguishing proof of holes in current inquire about and zones for future examination. Accentuation on the require for large-scale, longitudinal considers.

Policy and Healthcare System Improvements

- Examination of existing approaches and their affect on constant malady administration. Proposals for approach enhancements to back early seriously treatment and multidisciplinary care.
- Methodologies to address boundaries to care, counting financial variables, healthcare foundation, and persistent instruction.
- Recommendations for upgrading healthcare conveyance, counting coordinates care models, financing for preventive care, and bolster for healthcare experts.

Materials and Methods

The inquire about taken after a bibliographic narrative approach, employing a audit technique, since bibliographic fabric was found that served as a premise for its advancement and compilation.

The inquiring about moreover centered on the precise look and audit of chosen scientific-academic writing, accessible in databases. Among them are PubMed, MedlinePlus, Scopus, Virtual Wellbeing Library (VHL), SciELO, Medigraphic, Dialnet and ELSEVIER, Cochrane, among others. A irregular and consecutive search was performed within the previously mentioned databases utilizing the descriptors:

- "surgical diseases",
- "Postoperative contaminations",
- "Site-specific diseases" and
- "Variables that impact postoperative contaminations in plastic surgery".

The comes about, gotten from this look were sifted based on the criteria of Spanish and English dialect, pertinence and topical relationship. So also, the distribution date of the advanced fabric was inside the final few a long time, with the special case of some older data records whose significance to the subject and ideas remains current.

This bibliographic fabric incorporates titles of logical articles, trials, orderly surveys, conventions, books, undergrad, postgraduate and doctoral theses, among other reports and data of logical and scholastic intrigued.

CONCLUSION

Hypertension and stroke are complex persistent illnesses that require multidisciplinary administration. Early seriously treatment offers critical benefits in terms of diminishing antagonistic occasions and moving forward quality of life. Collaboration between cardiology, nephrology, and neurology is basic to address current challenges and optimize clinical results.

Author Contributions: For research articles with several authors, a short paragraph specifying their individual contributions must be provided. The following statements should be used "Conceptualization, X.X. and Y.Y.; methodology, X.X.; software, X.X.; validation, X.X., Y.Y. and Z.Z.; formal analysis, X.X.; investigation, X.X.;

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Data Availability Statement: We encourage all authors of articles published in MDPI journals to share their research data. In this section, please provide details regarding where data supporting reported results can be found, including links to publicly archived datasets analyzed or generated during the study. Where no new data were created, or where data is unavailable due to privacy or ethical restrictions, a statement is still required. Suggested Data Availability Statements are available in section "MDPI Research Data Policies" at https://www.mdpi.com/ethics.

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Abbreviations

The following abbreviations are used in this manuscript:

CKD:	Chronic kidney Disease
ASCOT:	Anglo- Scandinavian Cardiac Outcomes Trial

BP:	Blood pressure
CHAP:	Cardiovascular Health Awareness Program
CI:	Cardiac Index
eGFR:	: Glomrular filtration rate
SCD:	Sudden cardiac passing
KFRT:	Kidney failure with replacement therapy
LV:	Left ventricular
LVH:	Left ventricular hypertrophy

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