

An impact of intima media thickness of carotids in cardio vascular profile

Jeevitha M*, Kalaichandar M, Kirubakaran K, Baskaran V, Kokila K, Jasper Stalin S

Department of Pharmacology, PSV College of Pharmaceutical science & Research, Orappam, Krishnagiri-635108, Tamil Nadu, India

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ABSTRACT

Low blood pressure truly includes a worse prognosis than the excessive blood strain. This mechanism, bills for the "reverse causation" seen within the haemodialysis' patients, the company of conventional risk elements, such as high blood pressure, hyperlipidemia, and obesity, appear to be a worst diagnosis. Exogenous erythropoietic products can growth blood strain and requirement of antihypertensive tablets. 30 Chronic ECFV overload secondary to activation of renin-angiotensin-aldosterone axis and disturbances inside the stability of vasoconstrictors and the vasodilators make a contribution to high blood pressure. Improvement in blood pressure can be introduced out with oral sodium restriction, diuretics, and fluid elimination with dialysis. Some patients will continue to be hypertensive notwithstanding of the careful attention to ECFV reputation. LVH is related with reduced endurance of sufferers on hemo/peritoneal dialysis. Lower five year survival charge in ESRD patients with LVH have a 30% than people missing LVH. This have a look at produces the mean carotid artery intima-medial thickness turned into higher in sufferers with superior CKD although it did now not attain statistical significance, probable due to smaller sample size. It was also observed that carotid intima medial thickness had no correlation with dyslipidemia. Even though the patients had maintained significantly normal cholesterol and high HDL levels, there was an increase in CIMT. Therefore, CKD patients, CIMT cannot be predicted based on the traditional atherosclerotic risk factors like serum cholesterol and HDL.



*Corresponding Author

Name: Jeevitha M
Phone: 8526613677
Email: mjeevitha46@gmail.com

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INTRODUCTION

In this section presents introduction of this research work. Chronic kidney disease (CKD) is Normally definite as an kidney harm for greater than 3 months

period, characterized through structural or functional abnormalities of kidney, with or without lower in the glomerular filtration charge (GFR), appear by way of both pathological abnormalities or markers of kidney damage, which includes abnormalities in configuration of the blood or urine, or abnormalities in imaging checks, with /without kidney damage. [1, 2]

CKD with co-morbidities like diabetes, hypertension can lead to early progression of stage 5 GFR <15ml/min i.e., end stage renal disease causing a greater risk for cardio vascular disease humanity and morbidity also. [3, 4]

The distance for lumen-Intima interface and Media-adventitia interface of artery wall is defined as Intima-medial thickness. IMT values are 0.5mm in

younger age group (20-30 yrs) and 0.9mm in elders (60-70 yrs). IMT of carotids are useful for measuring severity of atherosclerosis which is usually associated with cardiovascular risk factors like diabetes, hypertension and also dyslipidemia. [5,6]

Association of hypertension represents a danger aspect of cardiovascular sickness found in CKD and almost invariably found in renal failure patients. Sodium retention and beginning of the renin-angiotensin machine have been measured the maximum vital mechanisms worried in the promotion of blood pressure in topics with kidney disease. Hypertension performs a crucial role in cardiac damage in CKD thru left ventricular hypertrophy (LVH). As in different populations in CKD patients with LVH predicts a worse CV prognosis. [5-8]

Pulmonary Hypertension is a worry of end level renal sickness. Pulmonary high blood pressure is defined as an average pulmonary artery stress which is extra than or once in a while equal to twenty-five mm Hg or Pulmonary artery systolic stress extra than 35 mm Hg. It is usually recognized in cardiology and in pulmonary hospital. [9]

In this article represents segment 2 of this article clarifies the aspect on the correlated works. In segment 3 represents the materials and methods accepted and segment 4 represents the particulars of the experimentations and deliberations. Lastly segment 5 accomplishes the article by allocation our extrapolations and forthcoming strategies.

RELATED WORKS

In this segment gives focuses the associated works of this research paintings. The kidney consists of many tortuous, closely packed tubules, bound by using a delicate connective tissue wherein the blood vessels, lymphatics and nerves run. A critical part of the kidney is the nephron. It is composed of a renal corpuscle that is constituted by way of glomerulus and the Bowman's capsule which filters the plasma. It additionally has a renal tubule composed of the proximal convoluted tubule, loop of Henle, distal convoluted tubule, collecting tubule and amassing duct which is involved with discerning resorption from the filtrate to form urine. Gathering ducts carry fluid from numerous renal tubules to a terminal papillary duct establishing into a minor calyx on the apex of a renal papilla. [10]

The kidney consists of numerous tortuous, intently packed tubules, certain by using a sensitive connective tissue in which the blood vessels, lymphatics and nerves run. Nephron is considered as an crucial

shape. It consists of a renal corpuscle that is constituted with the aid of glomerulus and the Bowman's capsule which enables in filtering the plasma. It additionally has a renal tubule collected of the proximal convoluted tubule, loop of Henle, distal convoluted tubule, amassing tubule and also accumulating duct which is worried with formation of urine by means of selective resorption. Collecting ducts enables in bring fluid from numerous renal tubules to a terminal papillary duct which get commencing into a minor calyx at the apex of a renal papilla. [11]

Renal arteries supplies kidney. Major artery branches into segmental branches which then divide into lobar, interlobar, arcuate and interlobular arteries. The arterial blood enters into the glomeruli through the afferent arteriole which then passes through the efferent arterioles and then converges to form interlobular veins. These interlobular veins pass to the corticomedullary connection before ending in arcuate veins and anastomose with neighbouring veins. They drain into interlobular veins which anastomose to form the renal veins. [12]

In a slightly surprising finding, Vupputuri conducted a study in US, where it was noted that alcohol and smoking are not related to CKD. 11A study refuting claims to the knowledge that family history might have a role in development of CKD, observed no association between family history of CKD and CKD. However, a Southern Chinese study by Wei et al, strongly claimed that first degree relatives are at a higher risk to develop CKD. [13-15]

MATERIALS AND METHODS

In this segment represents the materials and methods of this research work. Outpatients attending Internal Medicine and Nephrology OPD and Inpatients admitted under Medical/ Nephrology. Chronic kidney disease patients fulfilling the inclusion criteria were included in the study after obtaining informed consent.

Detailed history regarding cardiac, renal and gastrointestinal symptoms will be collected by means of a questionnaire as per the attached proforma. Complete blood count, urea, creatinine, liver function tests, fasting lipid Profile, calcium and phosphorus and Ultrasound of abdomen. Assessment of Renal status by blood urea, serum creatinine, USG abdomen. Severity of CKD is assessed by Cockcroft-Gault GFR formula and MDRD formula. Assessing the cardiac status by ECG, ECHO, Chest X ray. Intima medial thickness of carotids Assessment by USG study both in dialysis and non dialysis patients. Assessment of PAH by ECG, Chest xray, ECHO.

RESULTS AND DISCUSSIONS

In this section focuses the results and discussions of this research work. (Figure 1)

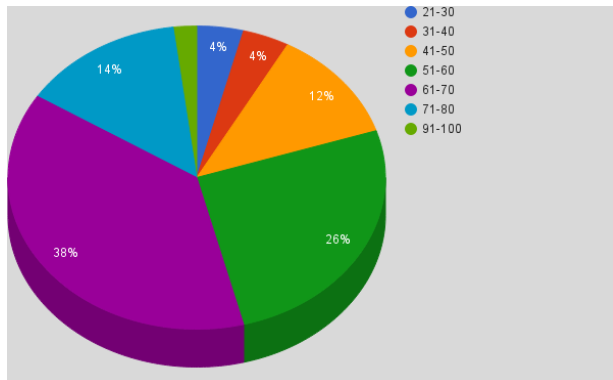


Figure 1: Age Distribution of the Subjects

This cross-sectional study was conducted over a population of 50 patients all of whom were diagnosed with CKD. The average age of the subjects was found to be 60 ± 13.87 years with a range of 21-92 years.

In the present study 50 patients with CKD in the stages 3-5 (calculated according to MDRD formula) were included. Univariate correlation analysis of CIMT with Age, BMI, Estimated GFR, Serum cholesterol, Triglyceride, HDL, LDL levels, Serum calcium and Serum phosphorus levels were attempted.

The present study did not have correlation between AGE and Mean CIMT. A significant correlation between BMI and CIMT. But our study did not show any correlation between BMI and Mean CIMT. This is probably due to the BMI in Indian population differs from western population.

There were conflicting reports regarding the relation between CIMT and Lipid profile. reported correlation between reported a non correlation.

Our study indicated that in spite of Total cholesterol level normal in 88% but still there were increased in CIMT ($P=0.0001$). Another observation in my study there was an increase in CIMT ($p=0.0001$) despite normal and high HDL ($>75\%$). The negative correlation with HDL. The present study did not show any correlation this may be probably due to early management and poor nutrition of our population. In the present study, CKD patients had high calcium phosphorous product. There was no significant correlation ($p=0.93160$) seen with CIMT and calcium phosphorous product in CKD patient. Mean CIMT was found higher in late stages of kidney disease (stage 4 and Stage 5) as compared to early stages (stage 1, 2 and 3). Though percentage (60%) of Mean CIMT was found to be higher in late stages of kidney dis-

ease (stage 4,5) but this is not statistically significant in our study. no significant difference between CKD groups and concluded that increase in CIMT caused by renal disappointment and/or metabolic abnormalities secondary to renal failure.

The stage 3 to 4 CKD had increased CIMT compared with normotensive volunteers. Lu Xia Zhang et al⁶⁹ in their study found stage 2-3 CKD patients (i.e., mild and moderate renal insufficiency) found significantly increased CIMT in those patients and concluded that arterial change might occur in course of CKD earlier than previously believed. But present study showed similar observation felt there is increased CIMT in stage 3 and 4. Our study showed 16% prevalence in CKD patients. Pulmonary hypertension were found in later stages (3-5) which is statistically significant when compared to other stages.

Left ventricular hypertrophy is the most common ECHO findings in CKD patients (44%), whereas systolic dysfunction was (18%) conducted prospective study of 161 patients of end stage disease on dialysis. He observed Left ventricular disease in 105 (65.2%) patients. Only 56 (34.8%) had normal echocardiogram, systolic dysfunction in 24 (14.9%), left ventricular hypertrophy in 88 (54.7%) & PAH in 42 (26.1%) patients.

Non traditional risk factors like Serum homocystine levels, Serum Parathyroid level lipoprotein (Lpa), etc. for atherosclerosis were not studied and compared with CIMT in this study. Inclusion of these variables would have added power to analysis. In the present study, CIMT was measured as an morphological index of atherosclerosis. Measurement of arterial wall difficulty will provide information regarding the effects of renal failure on functional changes of arterial wall in patients with CKD. Pulse wave velocity is emerging as a most reliable estimate of arterial stiffness (functional measurement) and a strong predictor of the cardiovascular events in ESRD. As our hospital is tertiary /referral centre most of the patient present inflate stages of disease only. Therefore, further studied require to throw light on the mechanism of atherosclerosis in early stages of Renal disease also. The mean age of CKD patients was 44.55 ± 16.26 years. Diabetes was the comorbidity of CKD in 38 (43.7%) patients, essential Hypertension in 27 (35%) and both diabetes with hypertension are 22 (25.3%) were other major causes of CKD patients. The mean BMI was 18.5-25 kg/m² in CKD patients are 35 (68%). Most of the CKD patients in the present study was in Stage 5 i.e. 31 (62%). Hypocalcaemia (< 9 mg/dl) was seen in 23 (46%) CKD patients. Hyperphosphatemia (4.1-5mg/dl) was seen in 31 (62%) and (>5 mg/dl) seen

in 11 (22%)CKD patients. High Total serum Cholesterol levels >150 mg/dl) was found in 32 patients (64%). The mean HDL-C levels were >40 mg/dl was found in 32 patients (64%). The prevalence of pulmonic hypertension in stage 5 CKD in 6(12%) was statistically significant($p < 0.05$). Mean CIMT in CKD patients does not significantly correlated with Age ($P=0.543389$).Body Mass Index ($P=0.4255$)also not correlated with Mean CIMT. Serum Triglyceride levels ($P=0.186$)and VLDL-C and LDL levels and with calcium- phosphorous product in CKD patients are not correlated. There is no statistically significant co-relation between the stage of kidney disease and CIMT.

CONCLUSION

Finally this work concludes that in present study, the mean carotid artery intima-medial thickness was higher in patient with advanced CKD though it did not stretch statistical significance, perhaps due to smaller sample size.It was also observed that carotid intima medial thickness had no correlation with dyslipidemia. Even though the patients had maintained significantly normal cholesterol and high HDL levels, there was an increase in CIMT. Therefore, CKD patients, CIMT cannot be predicted based on the traditional atherosclerotic risk factors like serum cholesterol and HDL. Prevalence of Pulmonary hypertension is significantly higher in stage 5CKD. None of the patients is having significant dyslipidemia possibly due to medications.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest for this study.

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