ORIGINAL ARTICLE

Prevalence of Peripheral Arterial Disease Using Arterial Brachial Index in Chronic Kidney Disease: A Study in Nephrology Department, DHQ Teaching Hospital, Sargodha

MUZZAMIL RIAZ MALIK[1], AURANGZEB AFZAL[2], BILAL RASOOL[3], *SHAZIA MUZZAMIL*[4]

ABSTRACT

Aim: To find out the prevalence of PAD via using ABI in CKD stage III to V patients, visiting the OPD of Nephrology department, DHQ Teaching Hospital, Sargodha
Study design: Cross sectional survey.
Settings: OPD of Nephrology Department, DHQ Teaching Hospital, Sargodha
Duration of study: 01-01-16 to 31-07-16 **(7** months)
Results: In our study, 86(35.8%) were between 15-40 years and 154(64.2%) were between 41-85 years of age, mean±SD was calculated as 48.2±12.9 years. 134(55.8%) were male and 106(44.2%) were females, mean arterial brachial index was calculated as 0.98±0.28. The frequency of peripheral arterial disease in patients of CKD III to V was recorded in 94(39.2%) while 146(60.8%) had no finding of PAD.
Conclusion: prevalence of PAD using ABI is higher in CKD stage III to V patients.

Keywords: Chronic kidney disease, stage III to V, Peripheral Arterial Disease, Arterial Brachial Index

INTRODUCTION

Chronic Kidney Disease (CKD) is defined as kidney damage or Glomerular filtration rate (GFR) below 60 ml/min per 1.73 m^2 for 3 months or more irrespective of the cause[1]. CKD is subdivided into 5 stages based upon GFR. GFR is calculated by cockroft gault formula. Patients with CKD have a high risk of developing complications like atherosclerosis, cardiovascular disease (CVD) and anemia[2] compared with individuals with normal kidney function. Kidney disease is an independent risk factor for the development of peripheral arterial disease (PAD), with risk increasing with worsening kidney function[3]. There are various factors causing higher morbidity and mortality, including Diabetes Mellitus, late referral to the nephrologist[4] and PAD. PAD represents the progressive occlusion of peripheral arteries by atherosclerosis and patients with CKD and PAD have high mortality rates than those with either of the conditions alone[5].

METHODOLOGY

Two hundred and forty patients calculated by $n=(Z_{x/2}/e)pq$ with 95% confidence level, 5% margin of error and taking expected percentage of peripheral arterial disease i.e. 32% in CKD III to V patients.
Inclusion criteria: Patients between the ages of 15-85 years of either gender and patients suffering from CKD stages III to V due to any cause included in this study.
Exclusion criteria

- Previously diagnosed PAD
- Patients having signs and symptoms of PAD (hair loss in legs, numbness or weakness in legs, non-healing ulcers, shiny skin of legs, erectile dysfunction, absent or weak pulse in legs)
- Patients with critical limb ischemia (Ulceration or gangrene of foot)
- Patients with history of amputation of left leg or arm due to any cause

Data Collection: Prevalence of PAD using ABI was investigated in 240 patients with no previous diagnosis of PAD, visiting the nephrology OPD at DHQ Teaching Hospital, Sargodha with CKD calculated via the Cockroft gault formula. Blood pressure in Left ankle and Left arm was taken by a standardized single BP apparatus by the same doctor every time to avoid measurement error. Patients with ABI <0.9 were considered positive for PAD. Self designed Performa was used as a data collection tool. Data collected through the self designed Performa was entered into SPSS version 16 and analyzed.

RESULTS

A total of 240 cases fulfilling the inclusion/exclusion criteria were enrolled. Detail of results is given in tables 1, 2, 3, and 4.

Table 1: Age distribution (n=240)

Age(in years)	n	%age
15-40	86	35.8
41-85	154	64.2
Total	240	100
Mean±SD	48.2±12.85	

Table 2: Gender distribution

Gender	n	%age
Male	134	55.8
Female	106	44.2
Total	240	100

[1,2]Assistant Professor Nephrology, Lahore General Hospital, Lahore
[3]Consultant Nephrologist, University of Lahore Hospital, Lahore
[4]Consultant Radiologist, Sadiq Hospital, Sargodha
Correspondence to: Dr. Muzzamil Riaz Malik, Cell: 0335-9860099

Table 3: Mean ankle Brachial Index

Ankle Brachial Index	n	%age
<0.9	94	39.2
≥0.9	146	60.8
Total	240	100
Mean±SD	0.98±0.28	

Table 4: Frequency of peripheral arterial disease in patients of CKD III to V

PAD	n	%
Yes	94	39.2
No	146	60.8
Total	240	100

DISCUSSION

In our study, 86(35.8%) were between 15-40 years and 154(64.2%) were between 41-85 years of age, mean±sd was calculated as 48.2±12.85 years, 134(55.8%) were male and 106(44.2%) were females, mean arterial brachial index was calculated as 0.98±0.28. The frequency of peripheral arterial disease (PAD) in patients of CKD III to V was recorded in 94(39.2%) while 146(60.8%) had no finding of PAD. These findings are consistent with a study conducted at Spain showing 32% cases having PAD in CKD[6].

Yingyi Luo et al[7] studied the association between chronic kidney disease (CKD) and PAD and recorded 41.9% cases with this morbidity, this is higher than reported in the current study. Garimella PS et al[8] is of the view that PAD is a strong risk factor for increased cardiovascular disease mortality and morbidity, ending with limb amputation, in persons with CKD.

Low ABI is associated with an increased risk of stroke, myocardial infarction, and cardiovascular death, and PAD is known to affect lower-extremity function and quality of life[9]. Many interventions, such as exercise training[10] and statin therapy[11] are effective in reducing the functional limitation associated with PAD.

CONCLUSION

The prevalence of PAD using ABI is higher in CKD stage III to V patients of Nephrology department DHQ Teaching Hospital, Sargodha.

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