

Awareness about the Diagnosis of Peripheral Arterial Disease among General Practitioner

ASAD ALI¹, ASAD ASLAM KOREJO², GUL HASSAN BROHI³, FAWAD HAMEED⁴, GHULAM KUBRA⁵, TARIQ ASHRAF⁶

¹Consultant Cardiologist & Post Fellow Cardiac Electrophysiology, NICVD, Karachi

²Consultant Cardiologist, Post Fellow Cardiac Imaging, NICVD, Karachi

³Assistant Professor of Cardiology, Liaquat University of Medical & Health Sciences Jamshoro

⁴Clinical Fellow (Cardiac Imaging) NICVD, Karachi

⁵Consultant Cardiologist Liaquat University of Medical & Health Sciences Jamshoro

⁶Consultant Interventional Cardiologist South City Hospital Karachi

Correspondence to: Dr. Asad Ali, E-mail: asadalimahesar@gmail.com, Cell: 0331-3532814

ABSTRACT

Objective: To determine the frequency of awareness about the diagnosis of peripheral arterial disease (PAD) among healthcare practitioners in Karachi.

Study Design: Cross sectional survey.

Place and Duration of the Study: Private Clinics and Private Hospitals of Karachi from 1st April to 30th October 2019.

Methodology: Two hundred and ninety two general practitioners who were doing practice, consulted by PAD patients were included. Awareness was considered if the GP selected clinical examination, pulse examination, ABI Scale, MRI, and angiography. If any three was present then was labelled as awareness. Gender, age and duration of practice were noted.

Results: There were 94.9% males and 5.1% females. Mean age was 39.17±3.86 years. The mean duration of practicing years was 10.06±3.16 years. 78.8% diagnosed PAD by clinical examination, 69.5% by pulse examination, 27.4% by ABI scale, 25.7% by MRI, and 29.1% by angiography. 30.8% general practitioners were aware diagnostic test used for PVD. There was significant association of awareness with age and years of practice.

Conclusion: Level of awareness about screening and diagnosis of PAD was low among general practitioners.

Keywords: Awareness, Peripheral arterial disease, Peripheral Vascular Disease, Healthcare Practitioners

INTRODUCTION

Peripheral arterial disease (PAD) is 1 out of the 3 main clinical manifestations related to atherosclerosis.¹ Peripheral arterial disease is considered to be a major cause of lower limb amputation and a strong predictor of coronary as well as cerebrovascular events.² Epidemiological data from Western countries show prevalence of PAD between 6.3-21.4% while gender, age and different sets of PAD definitions seem to be the cause behind variation in prevalence of PAD.^{3,4} Data from United States have highlighted male gender above the age of 50 years to be at increased risk of developing PAD.⁵

Around 50% of PAD patients are asymptomatic while majority exhibit symptoms during clinical phases like intermittent claudication or critical limb ischemia. In patients of PAD, risk of developing cardiovascular disease is similar between symptomatic and asymptomatic patients.⁶ Among asymptomatic cases of PAD, it can be diagnosed adopting non-invasive tools like "ankle brachial index (ABI)" which is done with the help of sphygmomanometer along with a Doppler device with sensitivity and specificity of 90% 95% respectively.⁷ ABI can easily be done general practitioners (GP) or nurses at an office setup. Global bodies endorse ABI to be the 1st line test aiming diagnosis of PAD.⁸ ABI in range of 0.9-1.4 is taken as normal while low values indicate lower extremity PAD whereas high values points towards non-compressible calcified vessel.⁹

Impacts of PAD on affected individuals, families, societies and economies have been studied around the world.¹⁰ As PAD is linked with raised incidence of cardiovascular morbidity and mortality, its early and timely

identification in the general population is vital to decrease the burden of PAD. Prognosis of PAD is worse when compared to coronary artery disease or cardiovascular disease as 20% of the patients with PAD are estimated to have at least 1 major cardiovascular event with 1 year.¹¹ Timely intervention and preventive treatment (e.g. anti-platelet, statin, angiotensin-converting enzyme inhibitor) can reduce the chances of cardiovascular disease linked with PAD.¹² Studies involving PAD cases and physicians have shown that awareness about PAD is generally low.¹³ Data also elaborates that PAD is considered underrated among significant proportion of both PAD cases and physicians. A study from Ireland reported that only 19% subjects had awareness about PAD.¹⁴

Underutilization of screening and diagnostic tools as well as lack of awareness about the diagnosis of PAD is some of the major reasons perceived behind under-diagnosis of PAD. Data about the implementation of international guidelines regarding early detection of PAD is lacking while no study has been done to evaluate the present situation about the awareness of diagnosis of PAD in Pakistan. This study was aimed to find out awareness about the diagnosis of PAD among GPs of Karachi, Pakistan.

MATERIALS AND METHODS

This cross sectional survey was conducted from different private clinics and private hospitals of Karachi from 1st April to 30th October 2019 and comprised 292 participants. All study participants had MBBS degree from different universities and colleges practicing as general physicians

in Karachi. Participants of genders, aged 26-45 years and practical experience between 5 to 15 years were enrolled. Specialist doctors were not involved. National Hospital GPs were also not included. Doctors who had enrolled themselves for any specialization program were also excluded. Those GP's were considered appropriate for this study who were doing practice, regularly consulted by PVD patients, and registered with either GP Partners different zones of Karachi like South, West, East and North Karachi. Surveys were done by visiting their clinic and hospitals. GPs were requested to fill the questionnaire that contained their demographics including name, age, gender and years of practice. Awareness about the screening of PAD was assessed. Awareness was considered if the healthcare professional selected the right option i.e. clinical examination, pulse examination, ABI Scale, MRI and angiography. If any of the three was present it was labelled as awareness.

Data was analyzed through SPSS version 26.0. Post stratification chi square test was applied. P-value <0.05 was considered as statistical significant.

RESULTS

Two hundred and twenty seven (94.9%) were males and 15 (5.1%) females. The mean age was 39.17±3.86 years and mean duration was 10.06±3.16 years (Table 1).

Table 1: Demographic information of the participants (n=292)

Variable	No.	%
Gender		
Male	277	94.9
Female	15	5.1
Age (years)		
≤ 40	195	66.8
> 40	97	33.2
Duration of practice (years)		
≤ 10	190	65.1
> 10	102	34.9

Table 2: Frequency of awareness about various diagnostic tools for PAD (n=292)

Diagnostic Tool	No.	%
Clinical examination	230	78.8
Pulse examination	203	69.5
Ankle brachial index	80	27.4
MRI	75	25.7
Angiography	85	29.1

Table 3: Distribution of study variables with respect to awareness about the diagnosis of PVD (n=292)

Variable	Awareness		P value
	Yes (n=90)	No (n=202)	
Gender			
Male	82 (91.1%)	195 (96.5%)	0.081
Female	8 (8.9%)	7 (3.5%)	
Age (years)			
≤ 40	52 (57.8%)	143 (70.8%)	0.029
> 40	38 (42.2%)	59 (29.2%)	
Duration of practice (years)			
≤ 10	47 (52.2%)	143 (70.8%)	0.002
> 10	43 (47.8%)	59 (29.2%)	

There were 230 (78.8%) diagnosed PAD by clinical examination, 203 (69.5%) by pulse examination, 80

(27.4%) by ABI scale, 75 (25.7%) by MRI and 85 (29.1%) by angiography (Table 2). According to awareness, 90 (30.8%) GPs had awareness about tools used for diagnosing PAD. Stratification with respect to gender, age and duration of practicing years was done to observe effect of these modifiers on awareness. Significant association of awareness with age (p=0.029) and year of practice (p=0.002) was noted while statistically insignificant (p=0.081) association was found with gender (Table 3).

DISCUSSION

Significance of early identification and treatment of PAD has been highlighted in studies worldwide. Around 50% of PAD patients report mortality due to cerebrocardiovascular complications while cardiovascular death rates are as high as 3 to 6 fold among cases having PAD when compared to those who are without PAD.^{15,16}

In the present study, overall awareness about the diagnostic tools for diagnosing PAD was noted in 30.8% GPs. There were 78.8% GPs who were diagnosing PAD by clinical examination, 69.5% by pulse examination, 27.4% by ABI scale, 25.7% by MRI and 29.1% by angiography. Experts have highlighted ABI to be the quickest and cost effect tool to establish lower extremity PAD but researchers have shown that it is significantly underutilized by both community and healthcare facilities.¹⁷ Some of the important reasons behind underutilization of ABI include time constraints, staff unavailability and lack of reimbursement. Significance of pressure measurements is considered to be a major step towards diagnosis of PAD as was stated by American Heart Association (AHA) in 2016.¹⁸

Research done regarding determination of PAD knowledge among physicians exhibited that their knowledge about PAD, its treatment and risk stratification was limited. Similar findings have been reported by internists, family physicians, cardiologists and vascular surgeons.¹⁹⁻²¹ Lack of knowledge about current standards regarding PAD described in the updated guidelines and ways to reduce the risk could be some of the factors behind low level of awareness. It is important to relate that data has shown that limited knowledge about the PAD has been translating into clinical practice of physicians where they have been found to have low rates of anti-platelet and lipid-lowering drugs whereas lack of utilization of statins and achievement of desired blood pressure are some other factors found.^{21,22}

Similar to our findings, studies from developing countries have found poor knowledge about interpretation of ABI results among resident trainees of vascular medicine.²³⁻²⁵ A potential factor could also be lack of hands-on training during academic years which might be reflecting low competency levels regarding ABI procedure and its interpretation. Data highlighted that only 21% of residents had awareness about AHA recommendations about PAD.¹⁸ Scientific sessions regarding updates about the screening, diagnosis and treatment of PAD should be done at mass levels. Measures need to be taken to increase the level of awareness about PAD and its manifestations to reduce the burden associated with it. Limitation of this research was that this was done in a single city and there was low female representation and nonrandomized study design. Follow up to this study is

advised after interventions done to increase the awareness level about PAD among GPs.

CONCLUSION

Level of awareness about screening and diagnosis of PAD was low among general practitioners. International guideline recommendations related to PAD screening and diagnosis needs to be widely implemented by general practitioners.

REFERENCES

1. Tummlala S, Scherbel D. Clinical assessment of peripheral arterial disease in the office: what do the guidelines say?. *Semin Intervent Radiol* 2018;35(5):365-77.
2. Firnhaber JM, Powell CS. Lower extremity peripheral artery disease: diagnosis and treatment. *Am Fam Physician* 2019;99(6):362-9.
3. Fowkes FC, Housley E, Cawood EH, Macintyre CC, Ruckley CV, Prescott RJ. Edinburgh artery study: prevalence of asymptomatic and symptomatic peripheral arterial disease in the general population. *Int J Epidemiol* 1991;20:384-92.
4. Meijer WT, Hoes AW, Rutgers D, Bots ML, Hofman A, Grobbee DE. Peripheral arterial disease in the elderly: the Rotterdam Study. *Arterioscler Thromb Vasc Biol* 1998;18(2):185-92.
5. Hirsch AT, Hiatt WR. PAD awareness, risk, and treatment: new resources for survival-the USA PARTNERS program. *Vasc Med* 2001;6(3 suppl):9-12.
6. Hoyer C, Sandermann J, Petersen LJ. The toe-brachial index in the diagnosis of peripheral arterial disease. *J Vasc Surg* 2013;58:231-8.
7. Creager MA, Belkin M, Bluth EI, Casey Jr DE, Chaturvedi S, Dake MD. 2012 ACCF/AHA/ACR/SCAI/SIR/STS/SVM/SVN/SVS Key data elements and definitions for peripheral atherosclerotic vascular disease: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Clinical Data Standards (Writing Committee to develop Clinical Data Standards for peripheral atherosclerotic vascular disease). *J Am Coll Cardiol* 2012;59:294-357.
8. Rooke TW, Hirsch AT, Misra S. 2011 ACCF/AHA Focused update of the guideline for the management of patients with peripheral artery disease (updating the 2005 guideline): a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol* 2011;58:2020-45.
9. Rac-Albu M, Iliuta L, Guberna SM, Sinescu C. The role of ankle-brachial index for predicting peripheral arterial disease. *Maedica (Bucur)*. 2014;9(3):295-302.
10. Bauersachs R, Zeymer U, Brière JB, Marre C, Bowrin K, Huelsebeck M. Burden of coronary artery disease and peripheral artery disease: a literature review. *Cardiovasc Ther* 2019;2019:8295054.
11. Global Lower Extremity Amputation Study Group. Epidemiology of lower extremity amputation in centres in Europe, North America and East, Asia. *Br J Surg* 2000;87:328-37.
12. An K, Huang R, Tian S, et al. Statins significantly reduce mortality in patients receiving clopidogrel without affecting platelet activation and aggregation: a systematic review and meta-analysis. *Lipids Health Dis* 2019;18(1):121.
13. Hirsch AT, Criqui MH, Treat-Jacobson D, Regensteiner JG, Creager MA, Olin JW, et al. Peripheral arterial disease detection, awareness, and treatment in primary care. *JAMA* 2001;286(11):1317-24.
14. Cronin CT, McCartan DP, McMonagle M, Cross KS, Dowdall JF. Peripheral artery disease: a marked lack of awareness in Ireland. *Eur J Vasc Endovasc Surg* 2015;49(5):556-62.
15. Rantner B, Kollerits B, Pohlhammer J, et al. The fate of patients with intermittent claudication in the 21st century revisited - results from the CAVASIC Study. *Sci Rep* 2017;8:45833.
16. Feringa HH, Bax JJ, Hoeks S, van Wanang VH, Elhendy A, Karagiannis S, Vidakovic R, Schouten O, Boersma E, Poldermans D. A prognostic risk index for long-term mortality in patients with peripheral arterial disease. *Arch Intern Med* 2007;167(22):2482-9.
17. Khan TH, Farooqui FA, Niazi K. Critical review of the ankle brachial index. *Curr Cardiol Rev* 2008;4(2):101-6.
18. Gerhard-Herman MD, Gornik HL, Barrett C, Barshes NR, Corriere MA, Drachman DE, et al. 2016 AHA/ACC Guideline on the management of patients with lower extremity peripheral artery disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation* 2017;135(12):e726-79.
19. Al-Omran M. Knowledge and attitude of physicians in a major teaching hospital towards atherosclerotic risk reduction therapy in patients with peripheral arterial disease. *Vasc Health Risk Manag* 2007;3(6):1019-27.
20. Al-Omran M, Lindsay TF, Major J, Jawas A, Leiter LA, Verma S. Perceptions of Canadian vascular surgeons toward pharmacologic risk reduction in patients with peripheral arterial disease. *Ann Vasc Surg* 2006;20(5):555-63.
21. Cassar K, Belch JFF, Brittenden J. Are national guidelines being applied by vascular surgeons? *Eur J Vasc Endovasc Surg* 2003; 26(6):623-8.
22. Lange S, Diehm C, Darius H. High prevalence of peripheral arterial disease and low treatment rates in elderly primary care patients with diabetes. *Exp Clin Endocrinol Diabetes* 2004; 112(10):566-73.
23. Ray SA, Srodon PD, Taylor RS, Dormandy JA. Reliability of ankle: brachial pressure index measurement by junior doctors. *Br J Surg* 1994;81:188-90.
24. Chaudru S, de Müllenheim PY, Le Faucheur A, Jaquinandi V, Mahé G. Ankle brachial index teaching: A call for an international action. *Int J Cardiol* 2015;184:489-91.
25. Wyatt MF, Stickrath C, Shah A, Smart A, Hunt J, Casserly IP. Ankle--284 brachial index performance among internal medicine residents. *Vasc Med* 2010;15:99-105.