REVISTA BRASILEIRA DE MEDICINA DE FAMÍLIA E COMUNIDADE
RBMFC

www.rbmfc.org.br
ISSN 2179-7994

Clinical Case

Approach to Peripheral Artery Disease in Primary Health Care: a case report

Abordagem da doença arterial obstrutiva periférica na Atenção Primária à Saúde: um relato de caso

Abordaje de la Enfermedad Arterial Periférica en Atención Primaria de Salud: un informe de caso

Hassã Pereira Lemos[1], Marianny da Silva Barreto[1], Marília de Oliveira Cunha[1], Maria Clara Sousa Evangelista Vieira[1], Thaynã Albuquerque da Silva[1], Isadora Teixeira de Freitas Cavalcante[1], Rebeca Alvares Dias[1], Wellison Gil Magalhães de Almeida[1]

[1]Universidade Christus, Medical School – Fortaleza (CE), Brazil.

Abstract

Introduction: Peripheral Artery Disease (PAD) is among the leading causes of cardiovascular morbidity. Although its classic symptom is intermittent claudication, it is not present in all patients, especially in older adults. The main risk factors for the development of this disease are aging, with a higher incidence after 50 years of age; smoking; sedentary lifestyle; systemic arterial hypertension; diabetes mellitus; dyslipidemia; and a history of coronary and cerebrovascular disease. The Ankle-Brachial Index (ABI) is the gold standard method for diagnosing PAD and can be performed in outpatient settings by any healthcare professional. **Case Presentation:** A case of severe PAD was identified in Primary Health Care (PHC) using the ABI and effectively managed by the attending physician, resulting in significant improvement in symptoms. **Conclusions:** Early identification of PAD in PHC improves patients' quality of life and reduces the negative consequences of underdiagnosis. Therefore, PHC, through its attributes of longitudinality and first-contact care, plays a key role in the diagnosis and management of PAD.

Keywords: Peripheral artery disease; Ankle-brachial index; Primary health care; Case reports.

Corresponding author:
Hassã Pereira Lemos
E-mail: hassapereiralemos@yahoo.com.br
Funding:
no external funding.
Ethical approval:
not applicable.
Informed Consent Form:
not applicable.
Provenance:
not commissioned.
Associate Editor:
Monique Bourget.
Peer review:
external.
Received: 09/12/2024.
Approved: 01/25/2026.

How to cite: Lemos HP, Barreto MS, Cunha MO, Vieira MCSE, da Silva TA, Cavalcante ITF, Dias RA, de Almeida WGM. Approach to Peripheral Artery Disease in Primary Health Care: a case report. Rev Bras Med Fam Comunidade. 2026;21(48):4504. https://doi.org/10.5712/rbmfc21(48)4504

Resumo

Introdução: A Doença Arterial Obstrutiva Periférica (DAOP) é uma das doenças ateroscleróticas que mais causam morbidade cardiovascular. Apesar de o seu sintoma clássico ser a claudicação intermitente, ela não está presente em todos os pacientes, especialmente nos mais idosos. Os principais fatores de risco para o desenvolvimento dessa doença são: envelhecimento, apresentando maior incidência após os 50 anos de idade; tabagismo; sedentarismo; hipertensão arterial sistêmica; diabetes mellitus; dislipidemia; e história de doença arterial coronariana e cerebrovascular. O Índice Tornozelo-Braquial (ITB) é o método padrão-ouro para o diagnóstico da DAOP e pode ser realizado ambulatorialmente por qualquer profissional da saúde. **Apresentação do caso:** Apresenta-se um caso de DAOP grave que foi identificado na Atenção Primária à Saúde (APS) por meio da realização do ITB e conduzido de forma eficaz pelo médico assistente, com melhora importante dos sintomas do paciente. **Conclusão:** A identificação da DAOP de forma precoce na APS, por meio do ITB, melhora a qualidade de vida dos pacientes e reduz as consequências negativas provocadas pelo subdiagnóstico da doença. Nesse sentido, a APS, por meio de seus atributos de longitudinalidade e de primeiro contato, é fundamental para o diagnóstico e tratamento dessa doença.

Palavras-chave: Doença arterial periférica; Índice Tornozelo-Braço; Atenção primária à saúde; Relatos de casos.

Resumen

Introducción: La Enfermedad Arterial Periférica (EAP) es una de las enfermedades ateroscleróticas que causan mayor morbilidad cardiovascular. Aunque su síntoma clásico es la claudicación intermitente, no está presente en todos los pacientes, especialmente en los ancianos. Los principales factores de riesgo para el desarrollo de esta enfermedad son: el envejecimiento, con mayor incidencia a partir de los 50 años; tabaquismo; estilo de vida sedentario; hipertensión arterial sistémica; diabetes mellitus; dislipidemia y antecedentes de enfermedad arterial coronaria y cerebrovascular. El Índice Tobillo Braquial (ITB) es el método de referencia para diagnosticar la EAP y cualquier profesional sanitario puede realizarlo de forma ambulatoria. **Presentación del caso:** Se presenta un caso de EAP grave que fue identificado en Atención Primaria de Salud (APS) a través del ITB y manejado eficazmente por el médico tratante, con mejoría significativa de los síntomas del paciente. **Conclusiones:** La identificación temprana de la EAP en la APS, a través del ITB, mejora la calidad de vida de los pacientes y reduce las consecuencias negativas provocadas por el subdiagnóstico de la enfermedad. En este sentido, la APS, a través de sus atributos de longitudinalidad y primer contacto, es fundamental para el diagnóstico y tratamiento de esta enfermedad.

Palabras clave: Enfermedad arterial periférica; Índice tobillo braquial; Atención primaria de salud; Informes de casos.

INTRODUCTION

Peripheral Artery Disease (PAD) is characterized by narrowing of the arterial lumen in the lower limbs, leading to reduced local perfusion and dysmetabolism. Patients with this condition are at increased risk of cardiovascular and cerebrovascular events, as it shares a common underlying cause: systemic atherosclerosis.[1,2]

Currently, PAD is among the leading causes of cardiovascular morbidity, ranking third after Coronary Artery Disease (CAD) and stroke.[3]

The prevalence of PAD increases with age, with a higher incidence after 50 years of age and exponential growth after the age of 65 years.[4] In addition to aging, major risk factors include smoking, sedentary lifestyle, systemic arterial hypertension, diabetes mellitus, dyslipidemia, hypothyroidism, a history of CAD and stroke, and family history.[3,5]

Intermittent claudication is the classic symptom of PAD and occurs due to reduced blood supply to skeletal muscle tissue of the lower limbs during exertion. It is described as pain or discomfort in the calves, thighs, or gluteal region during walking that is relieved with rest. Despite being the most characteristic symptom, it is not present in all patients, especially in older adults.[1]

In addition to this symptom, some signs may be observed, such as hair loss, muscle atrophy, changes in skin color and integrity, with the skin often appearing thin, shiny, dry, or scaly. Paleness, hypothermia, ulcers, and even necrosis are also signs that can characterize PAD, especially in more critical stages.[6]

When PAD is suspected based on clinical signs and symptoms, diagnostic investigation is necessary. The Ankle-Brachial Index (ABI) is the gold standard method. It is a noninvasive, low-cost, and easily accessible test that can be performed in outpatient settings by any healthcare professional.[3]

The ABI has a specificity of 92% and a sensitivity of 61% for PAD.[7] It is calculated by measuring the systolic pressure of the dorsalis pedis and posterior tibial arteries bilaterally, selecting the highest systolic pressure of each leg, and dividing each of the selected values by the highest brachial systolic pressure, thus resulting in the right and left ABI. Ratios less than 0.9 strongly suggest the presence of a deficit in the arterial circulation of the lower extremities.[3,8]

Given this context, this study aims to report a case of severe PAD diagnosed in Primary Health Care (PHC) and to highlight the importance of PHC, particularly its attributes of longitudinality and first-contact care, in the diagnosis and treatment of the aforementioned pathology.

CASE PRESENTATION

A 79-year-old male patient attended an appointment in March 2022 at a Health Center to receive the results of tests that had been previously requested. During the visit, he reported that he felt pain (cramps) in the calf of the left lower limb (LLL) during the third lap of his walk, which improved after rest. He said that he used to walk for about 30 minutes a day, in addition to exercising at home, but due to the symptoms, he was tolerating only 10 minutes of this activity.

The patient was a former smoker, with a 35 pack-year history, and a former alcohol user, and had not used these substances for 30 years. As for his comorbidities, he had Systemic Arterial Hypertension (SAH) and was undergoing treatment with Losartan (100 mg/day) and Amlodipine (10 mg/day).

On physical examination, the patient was in good general condition, acyanotic, anicteric, afebrile, hydrated, and with normal skin color. No abnormalities were found on cardiac and pulmonary auscultation, and his blood pressure was 145 x 73 mmHg. In the evaluation of extremities, the dorsalis pedis pulse of the LLL was not palpable, and there were ocher dermatitis and dilated veins, typical signs of chronic venous insufficiency.

The results of the previously performed tests were: Hemoglobin (Hb) = 13.1 g/dL; Hematocrit (Ht) = 40.3%; Leukocytes = 5200/μL; Platelets (Pt) = 211,000/μL; Blood glucose = 116 mg/dL; Glycated hemoglobin (HbA1c) = 6.1%; Creatinine (Cr) = 0.99 mg/dL; Total cholesterol (TC) = 221.1 mg/dL; HDL cholesterol (HDL-c) = 36 mg/dL; Triglycerides (TGL) = 263 mg/dL; LDL cholesterol (LDL-c) = 132.5 mg/dL; Albumin/Creatinine ratio (ACR) = lower than analytical sensitivity; and Urinalysis (UA) was unremarkable.

In view of the tests and clinical evaluation, the attending physician considered that the patient had stage 1 SAH associated with high cardiovascular risk. Thus, he maintained the medications for SAH and started Atorvastatin due to dyslipidemia, evidenced by laboratory tests, in the context of his high cardiovascular risk. He also considered the possibility of the patient having PAD.

Given the attributes of PHC, the attending physician decided to use continuity of patient care, which presupposes the bond between professional and patient over time, to schedule a new appointment in which he would address the suspicion of PAD by performing the ABI.

In the meantime, the attending physician organized his schedule to ensure the appropriate time and prepared the necessary material for performing the ABI (vascular Doppler machine, conductive gel, and sphygmomanometer).

The patient returned for the appointment two weeks later and reported a reduction in pain in the LLL, describing it as a mild sensation of heaviness, which resolved with rest and returned during daily walks.

He also reported that he spent a few days without feeling such pain and that he was able to perform at least 10 minutes of walking in the morning and afternoon.

At the time, the attending physician performed the ABI, showing a value of 0.4 in the right lower limb (RLL) and 0.7 in the LLL. The diagnosis of PAD was confirmed by these values; in addition, the disease was classified as severe (ABI≤0.4). In view of the severity of the condition, a Doppler ultrasound of the lower limbs was requested for further evaluation of interventional treatment with a vascular surgeon.

In order to reduce the morbidity and mortality of the PAD patient, the following medications were prescribed: a statin, already in use; and Acetylsalicylic Acid (ASA), an antiplatelet agent effective in reducing the risk of developing CAD and stroke in individuals with peripheral artery disease of the lower limbs. For improvement of intermittent claudication, Cilostazol was prescribed, a medication with vasodilatory properties, effective in treating symptoms and increasing walking distance of PAD patients.

In the following appointment, the patient reported significant improvement in symptoms during exertion after initiation of ASA and Cilostazol, thus increasing the walking time from 10 to 15 minutes. Moreover, he brought the results of the Doppler ultrasound previously requested.

In the evaluation of the LLL, the presence of arteries with diffuse coarse parietal calcification, absence of Doppler flow of the anterior tibial and dorsalis pedis arteries, monophasic flow in the posterior and fibular tibial arteries, and absence of ectasias and aneurysms were observed. As for the RLL, the presence of arteries with diffuse coarse parietal calcification, absence of Doppler flow of the posterior tibial artery, stenosis less than 50% in the common femoral artery, monophasic flow in the anterior tibial, dorsalis pedis, and fibular arteries, and absence of ectasias or aneurysms were observed. Given the diffuse and severe impairment of the patient's arteries of the lower limbs, some of them with total occlusion of the lumen, the attending physician referred the patient to the vascular surgeon to evaluate the possibility of interventional treatment.

DISCUSSION

The patient presented several risk factors for PAD, such as age, history of smoking, SAH, and dyslipidemia. According to the 2016 guideline of the American Heart Association/American College of Cardiology on the management of peripheral artery disease of the lower limbs, patients with increased risk for PAD include: age greater than or equal to 65 years; age between 50 and 64 years with risk factors for atherosclerotic disease, such as SAH, diabetes mellitus, hyperlipidemia, family history of PAD, and history of smoking; age less than 50 years with diabetes mellitus and another additional risk factor for atherosclerosis; and individuals with known atherosclerotic disease in another vascular bed, for example, stenosis of the coronary, carotid, subclavian, renal, mesenteric arteries; or with abdominal aortic aneurysm.[9]

The symptoms and signs of PAD are variable. Patients may present with the classic symptom of claudication or advanced disease, including chronic limb-threatening ischemia. Researchers have shown that most patients with confirmed PAD do not present with typical claudication. These individuals may be asymptomatic or present with atypical limb symptoms. In the present report, the patient presented with cramp-like pain, which, despite worsening during walking and improving at rest, did not characterize claudication, which could delay the diagnosis.[10]

As observed in the present case, measurement of the ABI can help identify many patients with previously unrecognized PAD. Despite the high accuracy of this method for the diagnosis of PAD, the lack of professional training and the limited availability of vascular Doppler are important obstacles to its use across different levels of care.[11]

According to Kawamura,[12] an alternative to the availability of vascular Doppler is the use of automated oscillometric sphygmomanometers, equipment increasingly present in clinical practice for blood pressure measurement. Its use makes ABI measurement a simple, easy, low-cost, and feasible technique for any well-trained professional.

Given the possibility of expanding the use of ABI in several scenarios, we emphasize the importance of its use in PHC, where patients have a high prevalence of PAD, as evidenced in some studies. The underdiagnosis of PAD in the practice of PHC professionals may be a barrier to the effective prevention of cardiovascular events associated with this disease.[13-15]

PHC, through its first-contact care attribute, is a key setting for the diagnosis of chronic diseases as well as for the prevention of complications associated with them. Other attributes should also be used, including longitudinality, which allows a holistic approach to the patient over time.[16]

Considering the wide range of services provided by PHC and the great potential of this level of care for significantly reducing morbidity and mortality related to cardiovascular diseases, it is important to invest more in improving its services, focusing not only on the diagnosis and treatment of these diseases, but also on health promotion and disease prevention. It is worth noting that, in recent years, many improvements have already been achieved, but many challenges must still be overcome in order to achieve more efficient management of patients with cardiovascular diseases in PHC.[17]

CONCLUSIONS

PAD is an important manifestation of systemic atherosclerosis. Although it is strongly associated with aging, PAD is also related to other factors, such as smoking, sedentary lifestyle, SAH, diabetes, dyslipidemia, hypothyroidism, a history of CAD and stroke.

In addition to the assessment of risk factors based on clinical history, the use of the ABI, considered a gold standard method due to its accuracy, ease of execution, and low cost, should be adopted in PHC to confirm the diagnosis of PAD. In the presented case, based on the complaint of claudication and suggestive findings on physical examination, the ABI was performed, which allowed the physician to diagnose and classify PAD, guide the initial therapeutic approach, request complementary tests, and refer the patient accordingly, ensuring continuity and coordination of care in PHC.

Due to the importance of this condition in the context of cardiovascular morbidity and mortality and its impact on the quality of life of the affected individuals, there is a need for closer clinical evaluation of patients who present with symptoms compatible with PAD and risk factors for its development. Early and adequate identification of this condition using the ABI, especially when performed in PHC, can help mitigate the negative consequences of underdiagnosis.

CONFLICT OF INTERESTS

Nothing to declare.

AUTHORS' CONTRIBUTIONS

HPL: Conceptualization, Data curation, Methodology, Project administration, Supervision, Writing – review & editing. MSB: Formal analysis, Investigation, Visualization, Writing – original draft. MOC: Formal

analysis, Investigation, Visualization, Writing – original draft. MCSEV: Formal analysis, Investigation, Visualization, Writing – original draft. TAS: Formal analysis, Investigation, Visualization, Writing – original draft. ITFC: Formal analysis, Investigation, Visualization, Writing – original draft. RAD: Formal analysis, Investigation, Visualization, Writing – original draft. WGMA: Formal analysis, Investigation, Visualization, Writing – original draft.

REFERENCES

1. Turrini FJ, Ventura MM. Prevalência de Doença Arterial Periférica em Idosos Atendidos no Ambulatório de Geriatria e sua Correlação com Fatores de Risco Cardiovascular. Unopar Cient Ciênc Biol Saúde. 2011;13(1):17–21.
2. Behroozian AA, Beckman JA. Asymptomatic peripheral artery disease: silent but deadly. Prog Cardiovasc Dis. 2021;65:2–8. https://doi.org/10.1016/j.pcad.2021.02.009
3. Cavalcante KS, Barroso WKS. Contribuição do índice tornozelo-braquial na estratificação do risco cardiovascular. Rev Bras Hipertens. 2021;28(4):272–5. http://doi.org/10.47870/1519-7522/20212804272-5
4. Bartelink M. Epidemiology and risk factors. In: Camm AJ, Lüscher TF, Maurer G, Serruys PW, ed. The ESC Textbook of Cardiovascular Medicine. Oxford: Oxford University Press; 2018. p. 2693–4. https://doi.org/10.1093/med/9780198784906.003.0775
5. Dimarzio G, Yoshida RA. Doença Arterial Periférica. In: Gusso G, Lopes JMC, Dias LC, ed. Tratado de medicina de família e comunidade: princípios, formação e prática. 2. ed. Porto Alegre: Artmed; 2019. p. 1394–402.
6. Firnhaber JM, Powell CS. Lower extremity peripheral artery disease: diagnosis and treatment. Am Fam Physician. 2019;99(6):362–9.
7. Herraiz-Adillo A, Cavero-Redondo I, Álvarez-Bueno C, Pozuelo-Carrascosa DP, Solera-Martínez M. The accuracy of toe brachial index and ankle brachial index in the diagnosis of lower limb peripheral arterial disease: a systematic review and meta-analysis. Atherosclerosis. 2020;315:81–92. https://doi.org/10.1016/j.atherosclerosis.2020.09.026
8. Norgren L, Hiatt WR, Dormandy JA, Nehler MR, Harris KA, Fowkes FGR. Inter-Society consensus for the management of peripheral arterial disease (TASC II). J Vasc Surg. 2007;45(1):S5–S67. https://doi.org/10.1016/j.jvs.2006.12.037
9. Gerhard-Herman MD, Gornik HL, Barrett C, Barshes NR, Corriere MA, Drachman D, et al. 2016 AHA/ACC Guideline on the management of patients with lower extremity peripheral artery disease: executive summary: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2017;135(12):e686–725. https://doi.org/10.1161/CIR.0000000000000470
10. McDermott MM, Mehta S, Greenland P. Exertional leg symptoms other than intermittent claudication are common in peripheral arterial disease. Arch Intern Med. 1999;159(4):387–92. https://doi.org/10.1001/archinte.159.4.387
11. Gengo e Silva RC, Melo VFA, Lima MAM. Validity, reliability and accuracy of oscillometric devices, compared with Doppler ultrasound, for determination of the ankle brachial index: an integrative review. J Vasc Bras. 2014;13(1):27–33. https://doi.org/10.1590/jvb.2014.006
12. Kawamura T. Índice tornozelo-braquial (ITB) determinado por esfigmomanômetros oscilométricos automáticos. Arq Bras Cardiol. 2008;90(5):322–6. https://doi.org/10.1590/s0066-782x2008000500003
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. https://doi.org/10.1001/jama.286.11.1317
14. Lagos RA, López EJD, Juárez BLC, Pagoada REC, Meza JCP, Munguía GIC. Enfermedad arterial periférica y diabetes mellitus de tipo 2 en atención primaria. Rev Cubana Angiol Cir Vasc. 2020;21(2):e113.
15. Diehm C, Schuster A, Allenberg JR, Stritzky BV, Tepohl G, Trampisch H, et al. High prevalence of peripheral arterial disease and co-morbidity in 6880 primary care patients: cross-sectional study. Atherosclerosis. 2004;172(1):95–105. https://doi.org/10.1016/S0021-9150(03)00204-1
16. Vieira NF, Lanza FM, Araújo DD, Cunha ES. Atributos da atenção primária à saúde no cuidado às pessoas com doenças crônicas não transmissíveis [Internet]. Goiânia: Cegraf UFG; 2023 [cited on Dec. 20, 2023]. Available at: https://files.cercomp.ufg.br/weby/up/688/o/MODULO_03___22_03_2023__1_.pdf
17. Brasil. Ministério da Saúde. Secretaria de Atenção Primária à Saúde. Departamento de Promoção da Saúde. Estratégia de saúde cardiovascular na atenção primária à saúde: instrutivo para profissionais e gestores [Internet]. Brasília: Ministério da Saúde; 2022 [cited on Oct. 5, 2023]. Available at: https://bvsms.saude.gov.br/bvs/publicacoes/estrategia_saude_cardiovascular_instrutivo_profissionais.pdf.