UDC: 616.137.83/.86:616.379-008.64
Professional paper

DIABETES MELLITUS TYPE 2 AS A MOST IMPORTANT RISK FACTOR IN THE DEVELOPMENT OF PERIPHERAL VASCULAR DISEASE: A CASE REPORT

Stojka DOKUZOVA, Nevenka VELICKOVA, Martina GJORGIEVSKA KAMCEVA

Faculty of Medical Sciences "Goce Delchev" University, North Macedonia
**Corresponding author e-mail: stojka.311144@student.ugd.edu.mk*

Abstract

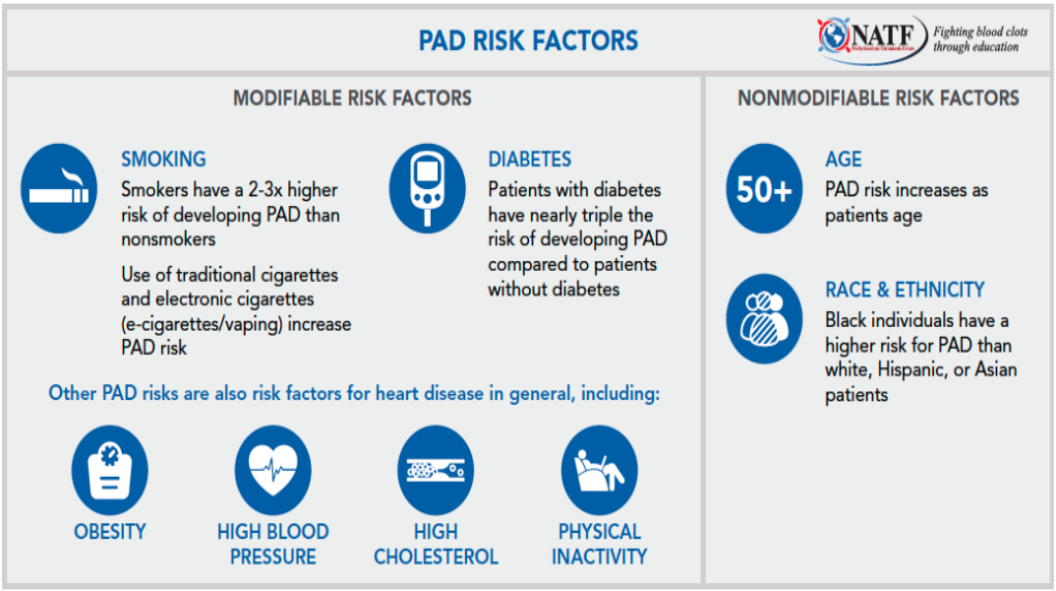
Peripheral artery disease is a considered as one of the major macrovascular complications in diabetes mellitus type 2. It is chronic arteriosclerotic illness that mainly affects the lower limbs and is presented as narrowed or blocked blood vessels. The prevalence increases with the age, it affects 15-20% of persons older than 70 years age, 10-15% of the general population. Smoking and high cholesterol levels increase the risk for PAD progression in large blood vessels such as legs, while diabetes increases the risk for PAD in small blood vessels such as the feet. Critical ischemia, its most severe form can lead to limb amputation and the patient's death, and even its asymptomatic forms are associated with a high risk of cardiovascular morbidity and mortality. Approximately more than half of all patients are asymptomatic and preventive therapy reduces the risk of complications and death, so it's important to recognize the subclinical forms in time and to control risk factors of disease. The risk factors that can be modified are tobacco use, hypertension, hyperlipidemia, diabetes mellitus, obesity and some of them cannot be modified such as age, sex or family medical history. Diabetes mellitus type 2 is considered as the most important risk factor for development of peripheral artery disease. The experts suggest that is necessary to establish an HBA1C therapeutic target below 8% in patient with DM and PAD.

Keywords: Peripheral artery disease, Diabetes mellitus Typ 2, blood vessels.

1. Introduction

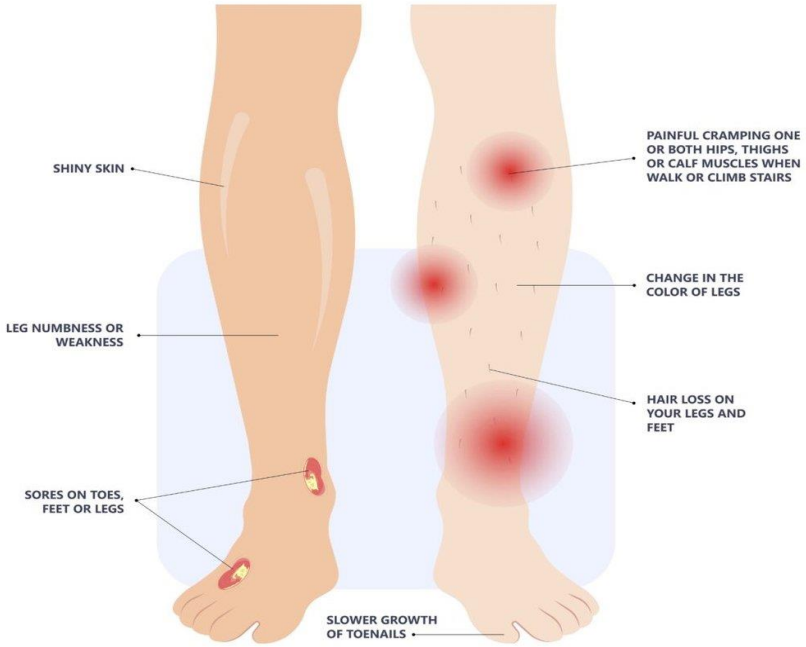
The American College of Cardiology/American Heart Association Practice Guidelines defines the presentation of PAD by four categories: asymptomatic, claudication, critical limb ischemia and acute limb ischemia. Patients who are asymptomatic do not have typical claudication symptoms. Diabetes mellitus, advanced age, family history, smoking, hypertension and dyslipidemia are commonly identified as traditional risk factors for PAD. Race and ethnicity, elevated inflammatory markers such as C-reactive protein, fibrinogen, leukocytes and interleukin-6, genetics, hypercoagulable states of altered blood levels of D-dimer, homocystein, lipoprotein are nontraditional risk factors for PAD.
Severe cases of PAD may result in foot ulcers, ischemic necrosis and various other complications leading to a poor long-term prognosis. It affects over 10%-20% of individuals with diabetes as a common complication and more than 50% in developed countries. In high income countries, individuals with diabetes now develop PVD as their initial vascular disease.

https://doi.org/10.62792/ut.amb.v9.i17-18.p2576



2. Case presentation

Our patient was 71 year old male with ongoing tobacco use and 10 year medical history of diabetes, hypertension and hyperlipidemia. His initial complaints were impaired glucose regulation and muscle pain in the legs of both extremities. On palpation the pulses at a.tibialis were decreased. Doppler ultrasound was done by dermatovenerologist and it revealed three-phase signal on the right, two –phase at a.tibialis anterior and one-phase at a.dorsalis pedis left and trophic, ulcerative changes on the toes. His laboratory findings showed poor glicoregulation, with HBA1C=9,9%, d-Dimer was also elevated significantly, FPG=12



mmol/l and he was transferred to vascular surgeon and then to orthopedic department where was done amputation.

He was treated with two broad-spectrum antibiotics and from the wound was isolated Pseudomonas aeroginosa. Also his insulin therapy was modified, tromboprophylaxis was

done and after a period of three months his results were better but still not in target for patient with PAD and DM typ 2.

3. Discussion

Could we have done more for our patient? This case highlights the critical need to increase awareness of PAD among nonendocrine providers. Game changing strategy for earlier diagnosis of PAD in risk categories would be a developing knowledge in other medical disciplines. PAD is presented with skin discoloration as a major symptom, severe pain in calf when walking, cramping in legs, sores that won't heal, coldness in left foot, slower growth of toenails, weak pulse in leg. The most important question in this case is if he was filling good was he a candidate for screening for PAD? The answer is yes. PAD is often missed because many people have no symptoms at first. Medical guidelines recommend screening for anyone over 65, as well as people with risk factors such as: Diabetes, current or past smoking, high cholesterol, high blood pressure, family history of PAD.

4. Conclusion

Peripheral artery disease is a lot more common than previously was believed. Diabetics and those who consume tobacco products are at high risk of the same.
PAD can lead to leg or foot amputation and even heart attack or stroke. While incisional surgery and medication were the only treatment options in the past, in the last three decades, various invasive, non-invasive, minimally invasive and new-age treatment methods have emerged. Early detection and treatment is the key!

References

[1] Bonaca MP,Creager MA. (2019), Periferal artery disease. In:Zipes DP, Libby P,Bonow RO,Mann DL,Tomaselli GF,Braunwald E,eds.Braunwald's Heart Disease.A Textbook of Cardiovascular Medicine.11th ed.Philadelphia, PA:Elsevier;chap 64.

[2] Centers for Disease Control and Prevention (2022), Periferal Arterial Disease (PAD) (https://www.cdc.gov/heartdisease/PAD.htm). Accessed

[3] Flanigan DP, Ballard JL, Robinson D,Galliano M, Blecker G, Harward TR. (2008), Duplex ultrasound of the superficial femoral artery is a better screening tool than ankle-brachial infex to identify at risk patients with lower extremity atherosclerosis. J Vasc Surg.47:789-792. (PubMed) (Google Scholar).

[4] Johnstone-Cox H, Kadian-Dodov D, Olin W. (2022) Diagnosis and Management of Diseases of the Periferal Arteries.In:Fuster V,Narula J, Vaishnava P, Leon MB,Callans DJ,Rumsfeld J,Poppas A,eds. Fuster and Hurst's The Heart.15th ed.McGraw Hill.

[5] National Heart, Lung and Blood Institute.(2022)What is Peripheral Artery Disease? (https://www.nhlbi.nih.gov/health/periferal-artery-disease)Accessed

[6] Ridker PM,Libby P,Buring JE.(2019), Risk marklers and the primary prevention of cardiovascular disease.In:Zipes DP,Libby P,Bonow RO,Mann DL,Tomaselli GF,Braunwald E,eds.Braunwald's Heart Disease:A textbook of Cardiovascular Medicine:11th ed.Philadelphia,PA:Elsevier:chap 45.

[7] Simons JP,Schnazer A.(2023), Lower extremity arterial disease:decision making and medical treatment. In:Sidawy AN,Perler BA,eds.Rutherford's Vascular Surgery and Endovascular Therapy.10th ed.Philadelphia,PA:Elsevier;:chap 108.

[8] Curry SJ,Krist AH,Owens DK,et al.(2018), Screening for peripheral artery disease and cardiovascular disease risk assessment with the ankle-brachial index: US Preventive Services Task Force Recommendation Statement.JAMA.2018;320(2):177-183.PMID:29998344 Pubmed.ncbi.nim.nih.gov/29998344/.

[9] White CJ.(2020)Atherosclerotic peripheral arterial disease.In:Goldman L,Schafer AI,eds. .Goldman-Cecil Medicine.26 th ed.Phuladelfia,PA:Elsevier,:chap 71.