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Case Report

Thromboangiitis obliterans (Buerger disease)

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ARTICLE INFO

Article history:

Received 18 April 2015

Accepted 11 June 2015

Available online 15 July 2015

Keywords:

Thromboangiitis obliterans

Buerger disease

Digital subtraction angiography

ABSTRACT

Thromboangiitis obliterans (Buerger disease) is an occlusive, nonatherosclerotic, inflammatory vasculitis that causes ischemia in small and medium vessels. Most commonly, Buerger disease is diagnosed in 40- to 45-year-old men with a heavy smoking history. Our case exemplifies the most common presentation, diagnosis, and treatment in a 53-year-old male smoker who presents with arm pain and dusky cool fingers. A Buerger diagnosis requires exclusion of autoimmune, diabetic, and embolic causes. The only recognized treatment for this disease is smoking cessation.

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Case report

A 53-year-old Caucasian male with a significant medical history of O₂-dependent chronic obstructive pulmonary disease (COPD), hyperlipidemia, and a smoking history of 10 cigarettes per day for “many years” presented to the emergency department with left antecubital arm pain as well as dusky, cool, and painful third, fourth, and fifth fingers. Venous ultrasound was unremarkable, and an embolic phenomenon was suspected.

The patient was admitted to the telemetry floor, and cardiac dysrhythmia was ruled out. Heparin and aspirin were started.

An aortic arch angiogram and left upper extremity digital subtraction angiography (DSA) was performed on the second day of hospitalization.

The angiogram was performed by a right retrograde femoral approach with a 5F and/or 11-cm sheath. A 5F pigtail catheter was advanced to the ascending aorta, and DSA images of the aortic arch and origin of the great vessels were obtained (Figs. 1–4).

A 5F H1 catheter was advanced into the proximal left subclavian artery. DSA images of the entire left upper extremity to the fingertips were obtained.

The angiogram revealed a normal left upper extremity runoff through the proximal palmar arch. Aortic arch and origin of great vessels were also normal. Multifocal occlusions were noted involving the second interosseus branch, lateral digital branch of the second finger, and bilateral distal digital branches of the third, fourth, and fifth fingers (Fig. 4). The patient's smoking history, presenting symptoms, and angiogram results led to the clinical and radiologic diagnosis of thromboangiitis obliterans (Buerger disease).

Smoking cessation counseling was provided. In addition, the patient was told to avoid any nicotine replacement, which could cause vasoconstriction. Patient was discharged on aspirin 325 mg a day and Norvasc (Amlodipine besylate [Norvasc; Pfizer, New York, NY]) 5 mg daily in hopes of vasodilation.

Competing Interests: The authors have declared that no competing interests exist.

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<http://dx.doi.org/10.1016/j.radcr.2015.06.003>

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Fig. 1 – Digital subtraction angiography of normal aortic arch. RT, Right part of the image.

Discussion

Thromboangiitis obliterans (Buerger disease) is a non-atherosclerotic, inflammatory vasculitis located in small-to-medium-sized blood vessels. The walls of the vessels are usually spared until a much later stage when the entire distal vessel fibroses. Buerger disease occurs most often in the extremities and digits; however, it has been documented in cerebral and coronary arteries, the aorta, and intestinal vessels [1]. Von Winiwater first described the disease in 1879; however, the disease is named after Leo Buerger who described the pathologic findings in the amputated limbs of patients in 1908 [2].

Although the cause of the disease is unknown, there is a very strong association between Buerger disease and heavy smoking: typically a pack and a half or more per day. India and the Middle East have a much higher rate of Buerger disease compared with Europe and North America because of increased percentage of smokers [3]. The annual incidence is

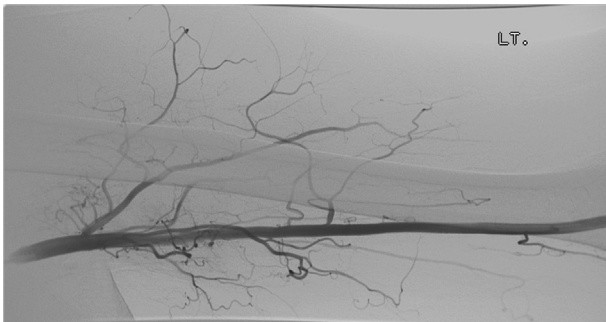


Fig. 2 – Digital subtraction angiography of normal left upper extremity. LT, Left part of the image.

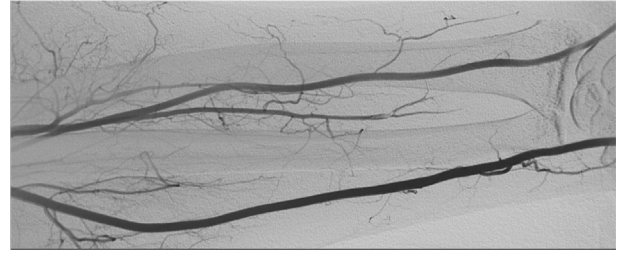


Fig. 3 – Digital subtraction angiography of normal left forearm.

12.6 per 100,000 in the United States. In addition, there is a higher incidence in men than women (9:1), and the average age of presentation is 40-45 years [3].

Using any form of tobacco, such as cigar smoking or snuff, can cause Buerger disease. Substituting cigarette smoking with smokeless (chewing) tobacco does not appear to decrease the risk of Buerger disease as concluded in 2 separate case reports [4,5]. Nicotine-containing patches can also keep the disease active [1]. Little research could be found on the effects of vaporizers as a risk for Buerger disease.

Although a variety of diagnostic criteria for this disease have been described, the most common factors include age between 40 and 45 years, male sex, signs of distal ischemia (claudication, pain at rest, and ulcers), and a smoking history [1]. Many patients will have more than one limb involved, and a positive Allen's test may be found on physical examination [3]. Almost two-thirds of Buerger patients have periodontal disease [6]. In addition, Raynaud's phenomenon and superficial thrombophlebitis are present in 40% of patients. No biopsy of the vessels is necessary for diagnosis. Exclusion of diabetes and autoimmune causes are ruled out by laboratory tests, and embolization is ruled out by arteriography. Corkscrew collaterals are sometimes seen around the occlusion [3].

The only definitive therapy for Buerger disease is smoking cessation. In one study, 94% of patients who quit smoking avoided limb amputation. Of the patients who continued to smoke, 43% had at least one amputation. [3]. Surgical

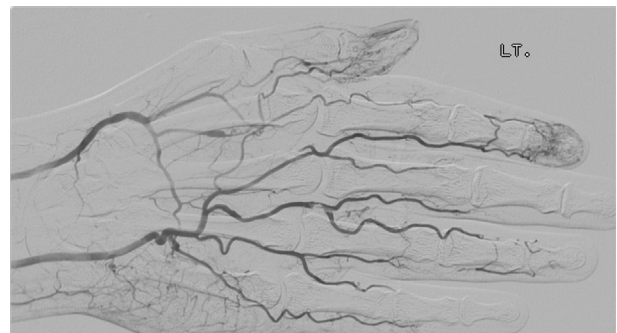


Fig. 4 – Digital subtraction angiography of left palmar arch and digits showing occlusions of second interosseous branch and distal digital branches of the third, fourth, and fifth digits. LT, Left part of the image.

revascularization is often not possible because of the lack of patent distal vessels [2].

REFERENCES

- [1] Arkkila PE. Thromboangiitis obliterans (Buerger's disease). *Orphanet J Rare Dis* 2006;1:14.
- [2] Vijayakumar A, Tiwari R, Kumar Prabhuswamy V. Thromboangiitis obliterans (Buerger's disease)—current practices. *Int J Inflam* 2013;2013:156905.
- [3] Olin JW. Thromboangiitis obliterans (Buerger's disease). *N Engl J Med* 2000;343(12):864–9.
- [4] Lawrence PF, Lund OI, Jimenez JC, Muttalib R. Substitution of smokeless tobacco for cigarettes in Buerger's disease does not prevent limb loss. *J Vasc Surg* 2008;48(1):210–2.
- [5] O'Dell JR, Linder J, Markin RS, Moore GF. Thromboangiitis obliterans (Buerger's disease) and smokeless tobacco. *Arthritis Rheum* 1987;30(9):1054–6.
- [6] Pavlic V, Vujic-Aleksic V, Zubovic N, Gojkov-Vukelic M. Periodontitis and Buerger's disease: recent advances. *Acta Inform Med* 2013;21(4):250–2.