



## Case Report

## Buerger's disease: early detection to minimize progression

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## ARTICLE INFORMATION

Received: August 18, 2022

Revised: December 12, 2022

Accepted: December 30, 2022

## KEYWORDS

Thromboangiitis Obliterans; Buerger's Disease;  
Rare Diseases; Disease Progression

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## A B S T R A C T

**Background:** Delays in the diagnosis of Buerger's disease are common. Its rare cases and lack of information about risk factors and signs and symptoms of the disease are thought to be the causes. This study aims to report and discuss findings of delays in the diagnosis of Buerger's disease cases experienced by two patients over many years.

**Case presentation:** we report two cases of male patients aged 58 and 60 with a long history of smoking at a young age. Both complained of the same symptoms: pain in the tips of the fingers and toes and unhealed wounds. They have suffered from them for years with a history of repeated treatments and got various diagnoses.

**Conclusion:** A comprehensive medical history, supportive physical examination, and angiography diagnostic can prevent delays in diagnosing Buerger's disease and thus minimize disease progression.

## INTRODUCTION

Buerger's disease is still rare. In America, the incidence of this disease is estimated to be between 12.6-20 cases per 100,000 population, while in Indonesia, data on its incidences are unknown.<sup>1</sup> It is common in young and middle-aged populations with long-term disability consequences long.<sup>2</sup> Because of its rare incidences and the lack of references, misdiagnosis often occurs. It resulted in its mishandling, and the disease got chronic. Several misdiagnoses have been reported in previous studies, one of which is that the patient was diagnosed with panniculitis.<sup>3</sup>

Case studies discussing this disease have been reported in several articles, but cases from abroad dominate them.<sup>1,4-8</sup> There are still a few cases reported from Indonesia. It leads to our concern that too early detection and misdiagnosis have caused the lack of reports in Indonesia. This case report is essential to be discussed in order to enrich the existing references. This study aims to report and discuss findings of delays in the diagnosis of Buerger's disease cases experienced by two patients over many years.

## CASE PRESENTATION

## Case 1

A 60-year-old male patient was brought to the hospital because he had a leg wound that had not healed for years. The history of the disease was obtained. He often complained of pain in the bones and muscles in his leg. It had been felt for more than 28 years. The patient has been treated everywhere, but the disease remains there. Doctors diagnosed skin infections, cellulitis, diabetic ulcers, and leprosy. The results of the physical examination revealed wounds on the feet that had necrotic tissue and other scars on the hands and feet (Figure 1). His blood pressure: is 180/80 mmHg, Pulse: is 125x/min, Respiration Rate: is 18 x/min, and Temperature: is 36.5 °C. Hemoglobin 9 mg/dl, fasting blood sugar 85 mg/dl. The patient has a history of amputation of the index and middle fingers of the left hand ten years ago due to an injury accompanied by tissue necrosis. The patient is an active smoker; in a day, he can spend 2-3 packs or about 24-36 sticks. He started smoking at the young age of 12 years. Once he had quit, it recurs. There is no history of consuming alcoholic beverages.

<https://doi.org/10.30595/medisains.v20i3.14717>

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## Case 2

A 58-year-old male patient was brought to the hospital because of a wound on the sole of their foot and discoloration of the extremities. The anamnesis and physical examination results show that the patient often experienced tingling and pain in the fingers and toes. The pain was getting worse, accompanied by a bluish discoloration. These had been felt by the patient more than ten years ago. There are also necrotic wounds on both soles of the feet (Figure 2). The patient had a history of

amputation of the second and third digits of the left finger a month before with the same symptoms (bluish then became necrotic). The patient is an active smoker. He smokes 2-4 packs of cigarettes or around 24-48 sticks. He started smoking at the young age of 15 years. He also consumed liquor. His blood pressure: is 150/90 mmHg, Pulse: is 123 x/minute, Respiration rate: is 20 x/minute, Temperature: is 36.7 oC, Hemoglobin: is 8.8 mg/dl, Blood sugar during 110 mg/dl, Ankle Brachial Index 0.72. He had often been admitted to the hospital with the same complaint, but doctors' diagnoses vary.



**Figure 1.** The wounds appear on both soles of the feet; they have experienced tissue necrosis



**Figure 2.** A bluish color appears on the fingers and toes and the soles of the feet; the wounds appear to have experienced tissue necrosis

## DISCUSSION

Buerger's disease, also known as Thromboangiitis Obliterans, is an occlusive, non-atherosclerotic, and progressive inflammatory disease of the small-to-medium-sized blood vessels and nerves in the extremities.<sup>1,7</sup> The inflammation causes Critical Limb Ischemia, which is a chronic condition characterized by severe pain in the extremities due to poor circulation in that area. In severe

cases, it can cause an infection that can develop into gangrene. In this phase, the patient must undergo an amputation procedure.<sup>9</sup> In our case, both patients often complain of pain in the extremities. The pain has been there for years, and they have also had finger amputation.

The risk factor for Buerger's disease in several references is tobacco consumption. It can be in the form of cigarettes, cigars, and other consumed products.<sup>7,10,11</sup> Its substances are known to irritate small and medium-sized blood vessels, triggering inflammation and causing narrowing of the

arteries.<sup>1</sup> In this case, both patients were active smokers from a very young age, 12 and 15 years old, meaning they have been active smokers for more than 40 years. Their daily cigarette consumption reached 2-4 packs or around 24-48 cigarettes. Nicotine intake in large quantities will trigger a narrowing due to the buildup of platelets on the walls of blood vessels. The blood vessels become narrowed, and the blood flow is obstructed, causing tissue death. Apart from tobacco, other risk factors are thought to be associated with the disease, i.e. age and autoimmune.<sup>12</sup> Various references claim that smoking is the most significant risk factor for this disease. A case report found a pregnant woman having Buerger's disease with symptoms of gangrene without a history of tobacco addiction.<sup>13</sup>

Patients with Buerger's disease can experience pain in the hands and limbs. The pain can appear anytime, both during activity and at rest. Pain may worsen when a patient gets stressed or exposed to cold air. Other symptoms include toes and hands that appear pale or turn blue, hands and legs being cold due to lack of blood flow (Raynaud's syndrome), hands and legs feeling tingled or numb, the tips of the fingers or toes experiencing changes in skin color and the appearance of the wound.<sup>14-16</sup> Symptoms of retinopathy and intestinal pain due to intestinal perforation have also been reported in studies.<sup>4,17</sup> Other symptoms that have been reported are chronic paronychia, proximal leukonychia or onycholysis, and nail bed erosion.<sup>5</sup> In this case, the symptoms on the patient are a pain in the extremities, bluish discoloration of the fingers and toes, and the appearance of unhealed wounds.

Diagnosis of Buerger's disease requires a medical history, physical examination, and supporting examinations. Examination of medical history aims to assess the presence of Buerger's disease risk factors. It is essential to ask the patient if he has had a smoking history from a young age. Physical examination is needed to assess specific signs and symptoms leading to Buerger's disease. The initial symptoms that patients often complain about are chronic pain in the extremities, complaints of tingling in the hands and legs and the tips of the fingers or toes; experience skin discoloration, and sores that occur when the disease gets severed. Palpation of peripheral pulses, auscultation of bruit arteries, Allen's test, and measurement of the brachial index are also needed to support the diagnosis of the disease. Computed tomographic, magnetic resonance or angiographic studies may be performed to assess the presence of peripheral artery occlusion and the extent of the disease.<sup>1,18</sup>

In this case, the patient's disease progression was very severe. This was due to the delay in diagnosing it. In case 1, the patient had suffered 28 years ago. They had been treated everywhere with different medical diagnoses. They

are more often prescribed antibiotics as suspected to have a skin infection. They have not been suggested to stop smoking by any medical staff; there is no information that smoking is closely related to the disease. This has exacerbated the disease progression. The lack of comprehensive and specific examinations associated with Buerger's disease may be one of the reasons for the long-delayed diagnosis. If it can be detected early, the possible risk of their amputation could be prevented.

## CONCLUSIONS AND RECOMMENDATION

Early detection can minimize the progression of Buerger's disease. Patients who often complain of pain in the extremities, both during activity and at rest, and accompanied by a history of smoking from a young age should be suspected as its early symptoms. Then, it is strongly suggested to do an ankle: brachial index examination immediately, an Allen test, and angiography to support the diagnosis. Upon confirming its diagnosis, the patient should be advised strictly to stop his tobacco consumption to inhibit its progression.

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