

## IMAGING HIGHLIGHTS

# Brain infarction in a young patient with Buerger's disease -- a case of cerebral thromboangiitis obliterans

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Buerger's disease (BD) or thromboangiitis obliterans is a vasculitis that most commonly affects the small and medium-sized arteries and veins in the extremities.<sup>1</sup> It is most frequently seen in the young men who smoke and is associated with low socioeconomic status. BD is diagnosed on the basis of the clinical findings; the pathogenesis is not completely understood.<sup>1-4</sup> In this report, we aim to present the clinical, magnetic resonance imaging (MRI) and angiographic findings of a 30-year-old man with ischemic stroke as a rare complication of BD.

## CASE REPORT

This is a 30-year-old man who has a past history of BD presenting with acute onset left hemiparesis. Eight years earlier, he first noted pain in his left hand and later developed Raynaud's phenomenon in the upper extremities. Diagnosis of BD was made based on left brachial angiography which showed obstruction of peripheral segments in both radial and ulnar arteries; and palmar corkscrew-shaped collateral vessels (Figure 1). Later that same year he was admitted to our hospital because of swelling and claudication in his legs. Left femoral angiography demonstrated the obstruction of crural arteries and typical corkscrew collateral arteries (Figure 2). Clopidogrel was prescribed but he did not take the medication regularly. MRI showed infarct of right basal ganglia (Figure 3). Contrast enhanced 3 D volumetric coronal maximum intensity projection (MIP) of the magnetic resonance angiography (MRA) showed a short segment right middle cerebral artery (MCA) M1 segment occlusion (Figure 4). Cerebral digital subtraction angiography (DSA) confirmed the right MCA M1 segment occlusion, and post-stenotic M2 segment opacified by collaterals (Figure 5).

## DISCUSSION

BD or thromboangiitis obliterans is a vasculitis that most commonly affects the small and medium-



Figure 1. Angiography of left hand demonstrating the obstruction of peripheral segments in both radial and ulnar arteries, and palmar corkscrew-shaped collateral vessels.

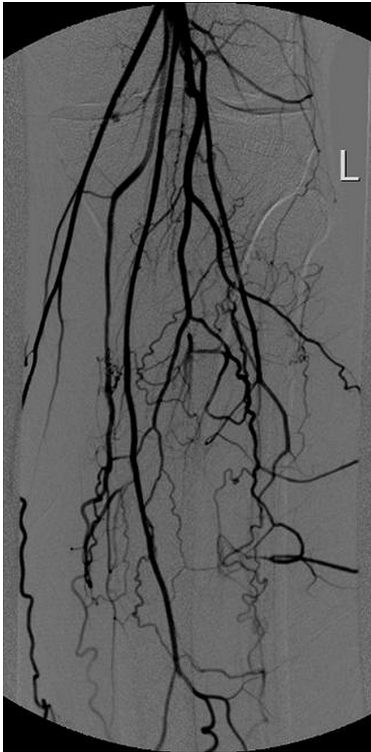


Figure 2. Baseline digital subtraction angiography of the leg demonstrating the thromboembolic occlusion of the crural arteries and typical corkscrew collateral arteries.

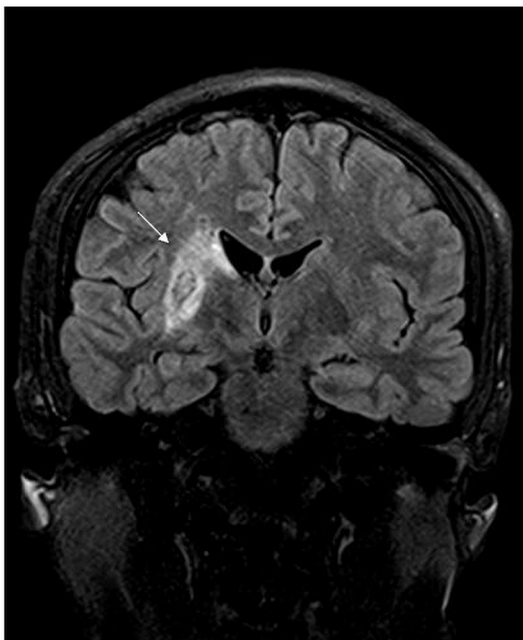


Figure 3. Fluid attenuated inversion recovery (FLAIR) coronal MRI image showing right basal ganglia infarct (arrow).

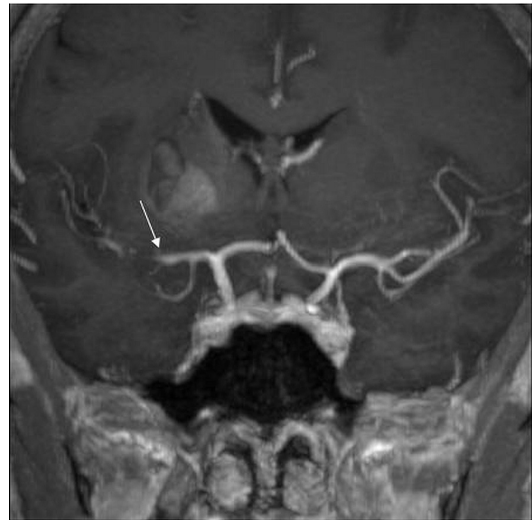


Figure 4. Contrast enhanced 3 D volumetric coronal maximum intensity projection (MIP) images showing the right middle cerebral artery M1 segment occlusion (arrow).

sized arteries and veins in the extremities. The diagnosis of BD can be made based on clinical criteria which include the followings; (1) a history of smoking, (2) onset before the age of 50 years, (3) the presence of infrapopliteal arterial occlusions, (4) either upper limb involvement or phlebitis migrans, and (5) the absence of atherosclerotic risk factors other than smoking. Abrupt interruption, a corkscrew appearance, and the absence of calcification or moth-eaten stenosis are the typical findings of arterial lesions which are shown by angiography.<sup>5,6</sup>

The patients typically present with distal extremity ischemia symptoms, ischemic ulcers, or frank gangrene of the toes or fingers. The coronary,



Figure 5. Cerebral digital subtraction angiography (DSA) demonstrating right middle cerebral artery M1 short segment occlusion and distal arterial opacifications via collateral vessels (arrow).

cerebral, and visceral circulations can rarely be affected resulting in serious complications.<sup>7</sup>

Cerebrovascular complications, so-called cerebral thromboangiitis obliterans is seen very rarely in BD (2%). There are two types of cerebral thromboangiitis obliterans ; type 1 is associated with large artery changes and type 2 is associated with medium and small artery changes. Cerebral thromboangiitis obliterans usually present with transient ischemic attack or ischemic stroke.<sup>8,9,10</sup>

In conclusion, although cerebral thromboangiitis obliterans is an uncommon complication of BD, it should be suspected when a patient with BD present with cerebral manifestations. MRI and MRA are non-invasive investigations that may demonstrate the vascular pathology, and DSA can demonstrate the typical collateral vessels.

## DISCLOSURE

Conflict of interest: None

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