Occluding Staghorn Calcification of the Aortic Arch and Left Subclavian Artery: Case Report

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Abstract. A calcified thrombus resembling a staghorn was found in the aortic arch, cast into this shape by the aorta and its branching vessel, the left subclavian, into which it projected for a short distance. Unique, in this case, is the extraordinarily large size of the calcification which was mostly free of the vessel wall, its radiological image, and its location. Digital subtraction angiography led to the diagnosis and was confirmed on computed tomography.

Key words: Aorta, calcification—Aorta, stenosis—Staghorn calcification

This is the first report, to our knowledge, of an intraluminal staghorn calcification found inside the aortic arch and continuing into its branching vessel, the left subclavian artery, thus almost completely obstructing both vessels. The calcified mass was adherent to the aortic vessel wall only by a small base, which was cleaved to remove the mass, therefore an endarterectomy was unnecessary. The diagnosis was found on the basis of a digital subtraction angiography (DSA) series.

Case Report

A 47-year-old blind man presented with tiredness, severe dyspnea, severe pulsating headaches, and weakness in his legs. A short time after hospitalization he developed pulmonary congestion and progressive renal failure. Blood pressure taken on his right arm measured 240/100, sometimes increasing to 285/104, short time after hospitalization. Pnea, severe pulsating headaches, and weakness in his leg.

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Discussion

Reviewing relevant literature, we found two reports describing an obstruction of the aortic isthmus by a calcified thrombus beyond the mouth of the left subclavian artery, one of which was due to severe atherosclerosis [1] and another due to syphilitic aortitis [2]. A third report of a 2–3 cm dense calcification found in the aortic arch distal to the left subclavian artery's orifice was also attributed to atherosclerotic disease [3]. However, an obstruction of both the left subclavian and the aortic arch by a single intraluminal calcified mass such as we describe presumably has not been reported before. The relationship of this staghorn calcification to the vessel wall, being nonadherent with the exception of a small base, is not typical for atherosclerosis. Thus, our calcified mass is distinguished from the more mundane focal obstructions of the aorta resulting from initial circular atherosclerotic thickening of the vessel wall with subsequent calcification.

Microscopic examination revealed the mass to be a calcified thrombus (with layers of more recent thrombosis along the edges). The factors that can account for thrombosis at this particular site in this case are 1) ulceration of the intima due to atherosclerosis or aortitis; 2) alteration of blood flow [4]; and 3) localization at an arterial branching [5]. Ulceration of the intima due to atherosclerotic plaque formation could possibly have triggered thrombosis, but this seems unlikely considering that no other signs of atherosclerotic disease were found, neither during surgery nor on aortography. Moreover, it is unusual for atherosclerosis to present at this specific location, and for it to lead to thrombus formation without initial atherosclerotic thickening of the aortic vessel wall.