

Giant aneurysm of an aberrant right subclavian artery from the left aortic arch

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An aneurysm of an aberrant right subclavian artery (ARSA) arising from the left aortic arch is a fairly uncommon abnormality of the aortic arch. We report a case of ARSA aneurysm discovered by chance when a routine chest radiograph was taken by the practitioner.

Clinical Summary

A 78-year-old man presented to his practitioner for a routine checkup. His cardiovascular risk factors included hypertension, hypercholesterolemia, and a smoking history of 50 pack-years. He had a 5-year history of coronary artery disease and had received a dual-chamber pacemaker because of sick sinus syndrome. Two years earlier, an abdominal aortic aneurysm was repaired with a Y-graft. Blood pressure was the same on the left and right sides and only a very faint pulse could be found over the right supraclavicular site. Chest x-ray films were compared with those taken 4 years earlier (Figure 1, A). The new x-ray films showed a mass in the upper right mediastinum that had enlarged. The latter, and the history of dilative arteriopathy (abdominal aortic aneurysm), were suggestive of an aneurysm of the right subclavian artery. The computed tomographic scans confirmed this diagnosis (Figures 1, B, and 2, A), revealing that the patient had a large new aneurysm (5.3 cm) of the right subclavian artery. An open repair with reconstruction of the aortic arch or aneurysm resection was contraindicated owing to relevant medical comorbidity. In this case, we reflected on combining endovascular repair with extracranial vessel bypasses. Consequently, the origin of the ARSA was covered by a thoracic aortic endograft (34-mm TAG; W. L. Gore & Associates, Inc, Flagstaff, Ariz) to exclude the aneurysm from the circulation (Figure 2, B), and the distal portion of the artery was ligated. As usual to prevent endoleaks, a sufficiently long landing zone was required so that the left subclavian artery also was covered by the endograft. In a second step, revascularization of both subclavian arteries was performed by constructing carotid-subclavian bypasses (right: 8-mm, left: 6-mm; JOTEC GmbH, Hechingen, Germany) via a supraclavicular approach. The patient

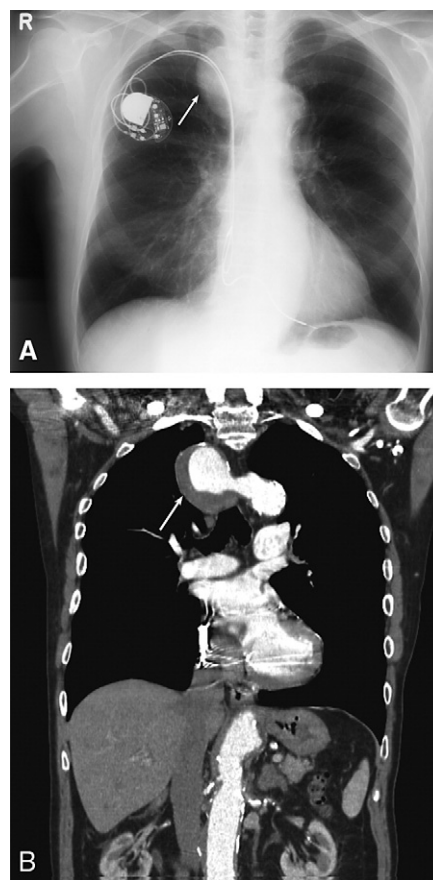


Figure 1. A, Chest x-ray film, August 22, 2005, showing a mass in the upper right mediastinum (arrow). B, Contrast-enhanced sagittal computed tomographic scan showing the large aneurysm of the aberrant right subclavian artery (arrow).

made an uneventful postoperative recovery and was discharged after 10 days. A computed tomographic scan 6 weeks postoperatively revealed complete exclusion of the aneurysm and good flow through the bypasses.

Discussion

The right subclavian artery, also known as *arteria lusoria*, arises from the left aortic arch as the fourth branch of the proximal descending aorta, distal to the origin of the left subclavian artery. In most cases (80%), the aberrant artery follows a retroesophageal course, rarely anterior to the esophagus or the trachea. It is about the fourth most common congenital aortic arch anomaly, with a reported incidence of 0.5% to 2% of the population.^{1,2} Most

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Figure 2. A, Contrast-enhanced axial computed tomographic scan at the level of the aortic arch. A large aneurysm of the aberrant right subclavian artery (arrow) is shown passing posterior to the esophagus. B, Contrast-enhanced axial computed tomographic scan after deployment of the thoracic graft (arrow).

patients with an ARSA remain asymptomatic. Occasionally, however, progressive dysphagia, also known as “dysphagia lusoria,” might develop. An aneurysm at the origin of this ARSA, seen in up to 60% of patients, was described first in 1936 by Kommerell, a

German radiologist. ARSA aneurysms have a high risk of rupture or thromboembolism. A review of the literature by Austin and Wolfe³ included 31 patients with aneurysms of the ARSA. Six of them died of rupture of an aneurysm as small as 4 cm in diameter. Therefore, immediate elective treatment is indicated, whether symptomatic or not.^{3,4} The choice of surgical approach depends on the presence or absence of aneurysmal disease, the anatomic details, the perceived urgency of the operation, and the surgeon’s experience. Independently of the technique, open repair is associated with high morbidity and mortality, up to 25%.⁵ For that reason, a combined endovascular and supra-aortic repair avoiding thoracotomy or sternotomy, is increasingly performed and preferred in high-risk patients. Various articles reporting this method have recently been published.^{1,2}

We can conclusively point out that (1) an ARSA is a quite common abnormality of the aortic arch (approximately 0.5% of population) and occasionally found by chance, (2) an ARSA with/without an aneurysm is in most cases asymptomatic, (3) it is generally accepted that the presence of an ARSA aneurysm is an indication for surgery, whether symptomatic or not, and (4) endovascular treatment is possible and safe with growing use of extracranial vessel bypass.

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