Detection of Large Aneurysm of Vieussens’ Arterial Ring After Abnormal Shadow on Chest Radiography

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A 73-year-old woman presented to our institution with an abnormal shadow on chest radiography. The patient was a nonsmoker and enjoyed good past health. There were no constitutional symptoms. She was completely asymptomatic during exercise and at rest. An ECG (Figure 1) showed normal sinus rhythm. A posteroanterior view of the chest radiograph (Figure 2) showed a well-circumscribed roundish mass at the left heart border. A lateral chest radiograph (Figure 3) suggested a more anterior-located abnormality. An echocardiogram was performed to delineate the relationship of the mass and the adjacent cardiac structure. It showed a large vascular structure anterior to the main pulmonary artery and continuous flow from the mass to the main pulmonary artery. Because the pulmonary artery vessel wall was clearly defined, the mass was unlikely to originate from the pulmonary artery per se. Differential diagnosis included coronary artery aneurysm or arteriovenous malformation (online-only Data Supplement Movies I and II). Left
Ventricular systolic function was normal, with normal regional wall motion.

A computed tomography angiogram was performed. There was an abnormal connection from the right coronary artery and left anterior descending artery to the mass, which was 6.5×6 cm in size (Figure 4). The mass was well demarcated and was only mildly enhanced by contrast heterogeneously. The margin of the lesion could not be distinguished from the left ventricular wall (Figure 5). Possible differential diagnoses included coronary aneurysm, arteriovenous malformation, and neoplastic growth (Figure 6).

A coronary angiogram was performed. There were abnormal torturous vessels that connected from the mid left anterior descending artery (Figures 7 and 8; online-only Data Supplement Movies III and IV) and the conal branch of the right coronary artery (Figure 9; online-only Data Supplement Movie V) to the huge contrast-filled mass. Features were compatible with aneurysm of Vieussens’ arterial ring.

Vieussens’ arterial ring was thought to be a remnant of the embryonic conotruncal circle. The arterial ring was the connection between the conus branch of the right coronary artery and the proximal right ventricular branch of the left anterior descending coronary artery. Vieussens’ arterial ring
will become dilated when there is proximal left anterior descending artery occlusion or, less frequently, right coronary artery occlusion. In our patient, there was concomitant mid left anterior descending artery occlusion. It was thought that the heterogeneous contrast filling in the computed tomography angiogram was due to inadequate contrast filling in such a huge aneurysmal sac. Heterogeneous contrast filling and poor demarcation of the lesion border made assessment of the nature and origin of the lesion difficult. There have been 2 reported cases of this condition. This is the first reported case in such a large aneurysm of the Vieussens’ arterial ring. This patient also demonstrated the complementary role of different investigations in working up the rare diagnosis of a common presentation. Aneurysm of the Vieussens’ arterial ring has a risk of rupture. Surgical resection was offered to the patient; however, she refused further intervention.

Disclosures

None.

References

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Circulation. 2009;120:e134-e136
doi: 10.1161/CIRCULATIONAHA.109.865220

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