Diagnostic Images

Two varieties of rib notching

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First patient

A woman of 27 presented with headaches for 1 year and blurring of vision for 6 months. On examination she was found to be hypertensive.

Investigations

Chest radiograph and venous digital subtraction aortography.

Figure 1 Case 1. Rib notching (white arrows) is prominent on the inferior margins of the posterior third to sixth ribs, bilaterally. The aortic knuckle is small but the left subclavian artery (black arrow) is prominent.

Figure 2 (a,b) Case 1. Venous digital subtraction angiography (DSA) shows the narrow descending aorta obstructed by the coarctation (white arrow) and subsequently in (b) the aorta beyond the coarctation. The ascending aorta and major branches especially the left subclavian are enlarged as well as the internal thoracic (mammary) artery (black arrow). AA – ascending aorta, DA – descending aorta, IA – innominate artery, LC – left carotid, LS – left subclavian.

Second patient

A woman of 23 presented for a routine chest radiograph for employment.

Investigation

Chest radiograph.

Figure 3 Case 2. There is irregular notching of the upper ribs, some ribs being markedly narrowed. There is also a pleural based soft tissue mass at the left lower lateral margin (curved arrow) representing a large neurofibroma.

Comment

Bilateral symmetrical rib notching is associated with coarctation of the aorta. The notches are small, on the inferior margin of the posterior ribs, usually in pairs, the more medial at about 5 cm from the spine and the other approximately 3 cm more laterally. The upper six ribs being most notably affected, the notches are produced by the enlarged and tortuous intercostal arteries acting as collaterals from the upper aorta to bypass the coarctation. Unilateral rib notching may follow a Blalock procedure-anastomosis of the left subclavian to the pulmonary artery.

The rib notching in neurofibromatosis is different, being asymmetrical, often larger with more marked narrowing of the affected ribs, more irregular, and irregularly distributed. A neurofibroma may be visible as in the second case or skin nodules may mimic intrapulmonary lesions. However, the diagnosis is made by the cafe-au-lait spots and there is usually a family history as in this case.

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Reference

Jefferson, K. & Rees, S. The bony thorax and heart disease. In: *Clinical Cardiac Radiology*, Butterworths, London, Boston, 1980, p. 125–127.