Multiple aneurysms in Takayasu arteritis: An uncommon presentation

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Section: Cardiovascular
Area of Interest: Arteries / Aorta
Procedure: Contrast agent-intravenous
Imaging Technique: CT-Angiography
Special Focus: Aneurysms Case Type: Clinical Cases
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Patient: 40 years, male

Clinical History:

A 20-year-old man presented with a 2-year history of recurrent chest and abdominal pain. On further enquiry he reported a past history of low-grade fever and malaise. Physical examination was unremarkable. On routine blood examination, elevated erythrocyte sedimentation rate (112 mm/hr) was the only significant finding. Chest radiograph showed prominent aortic shadows.

Imaging Findings:

CT angiography was done for further evaluation and characterization of the prominent aortic shadow seen on plain chest X-ray. It shows multiple saccular aneurysms in the descending thoracic and abdominal aorta (Fig. 1). The aorta appears dilated, tortuous and shows mild smooth circumferential and enhancing mural thickening. The superior mesenteric and right renal arteries were also involved and showed similar circumferential mural thickening (Fig. 2), other major aortic arch branches and pulmonary arteries appeared normal. No evidence of pleural or pericardial effusion was noted.

Discussion:

Takayasu arteritis is a chronic inflammatory condition of unknown aetiology and commonly presents in the 2nd or 3rd decade of life [1]. It primarily involves major vessels such as the aorta and its major branches. In some patients, pulmonary and visceral arteries such as coeliac trunk and superior mesenteric arteries are also involved [2]. Definitive diagnosis is made by biopsy, which is a risky procedure and samples are not always adequate, hence computed tomographic angiography plays a vital role for the differential diagnoses and final diagnosis of this condition.

CT angiography:

Luminal changes: Stenosis of the lumen is a fairly common finding seen in the aorta and its major branches such as subclavian, carotids and renal arteries. Aneurysm, vascular ectasia and occlusion of the lumen are infrequent findings. In a study done by Matsumura K et al, incidence of saccular or fusiform aneurysms was 31%, however, multiple aneurysms were found in only 13% of patients. In another study by Suyoshi E et al, incidence of aortic aneurysms was 45.2%. [3, 4, 5, 6]

Collateral vessels are another important finding seen in patients with significantly narrowed vessels; MPR and VRT
images are particularly helpful in depicting collateral vessels.

Mural thickening: The most common feature of Takayasu arteritis is concentric mural thickening of the aorta, its major branches, pulmonary and coronary arteries. The length of the thickened segment varied from few millimetres to several centimetres. On post-contrast CT angiography, the thickened segment shows a "typical double ring enhancement pattern", which includes a poorly enhancing inner rim and a well enhancing outer rim, this pattern being typically observed in the venous phase. Calcification of vessel wall is the common finding. [7, 8, 9]. Involvement of pulmonary and coronary arteries can be seen in approx. 63 and 44 % of cases. [9]

Differential diagnosis includes atherosclerosis, polyarteritis nodosa and giant cell arteritis. Atherosclerosis plaques are usually seen in patients older than 50 year of age, while Takayasu arteritis is a disease of the younger population. Giant cell arteritis commonly involves branches of external and internal carotid arteries. In polyarteritis nodosa, renal and gastrointestinal arteries are predominantly diseased and multiple microaneurysm formation in involved arteries is the characteristic finding. [10, 11, 12]

Learning points:
1) Takayasu arteritis is a chronic inflammatory disorder, which commonly involves the aorta and its major branches along with pulmonary and coronary arteries.
2) CT angiography is invaluable for the diagnosis and work up of this condition. Common findings include circumferential mural thickening, stenosis, aneurysms and collateral vessels.

**Differential Diagnosis List:** Takayasu arteritis, Giant cell arteritis, Polyarteritis nodosa

**Final Diagnosis:** Takayasu arteritis

**References:**

Description: Volume rendered images (A, B, C) and curved minimum intensity projection (D) images show dilated, tortuous aorta and multiple saccular aneurysms. Origin: Department of Radiodiagnosis, G B Pant Institute of Post Graduate Medical Education And Research
Description: Sagittal (A) and axial (B) contrast-enhanced computed tomography images show circumferential mural thickening of superior mesenteric artery (yellow arrow) and right renal artery (red arrow). Origin: Department of Radiodiagnosis, G B Pant Institute of Post Graduate Medical Education And Research, New Delhi, India