Unusual cause of chest pain: Thoracic aorta calcification

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ABSTRACT

A 40-year-old woman treated for pulmonary tuberculosis presented with chest pain which was aggravated with exertion without radiation. Chest X-ray shows widening of mediastinum, old healed, and calcified parenchymal lesion. Computed tomography scan showed annular calcification of aorta (solar eclipse sign) with significant narrowing of aorta. The patient responded well with vasodilator nifedipine, and almost 75% reduction in symptoms was seen after 1 month of the treatment.

Key words: *Aorta, Calcification, Chest pain*

The calcification of aorta is commonly encountered in older individuals due to atherosclerosis. Thoracic aortic calcification is associated with hypertension and increased risk of myocardial infarction. Calcification of thoracic aorta is associated with coronary and valvular calcifications, reflecting an underlying atherosclerotic process. This is an incidental diagnosis in chest X-ray performed for other diagnosis. Computed tomography (CT) of the chest can be used for risk stratification for coronary artery disease, and amount of calcium correlates strongly with the prognosis [1]. Thoracic and abdominal aortic calcification is associated with increased risk of cardiovascular and cerebrovascular events [2].

CASE REPORT

A 40-year-old woman presented with lower chest pain for the past 6 months, which was present throughout the day, dull aching type aggravated with exertion. She denied of radiation of pain to the shoulder, arm, or neck. When the patient came for the first time in our hospital, she was already on amitriptyline and analgesic such as tablet etoricoxib prescribed by a private physician. Bowel and bladder habit was within normal limit. On examination, her vitals were within normal limits except blood pressure which was 146/94 mmHg in the left arm in supine position. She was on amitriptyline for an unspecified time and thyroxin for hypothyroidism. Chest radiograph performed which shows mediastinal widening and few calcified parenchymal lesion (Fig. 1). Electrocardiogram showed features of left ventricular hypertrophy without any feature for coronary ischemia. The patient has undergone treadmill test which was negative. The patient was further investigated by CT scan to characterize the lesion and echocardiography to assess cardiac function. Echocardiogram was normal, and left ventricular ejection fraction was 55%. CT showed gross atherosclerotic calcified plaque in the descending thoracic aorta and in visible portion of the abdominal aorta. At few places, it causes a significant reduction in the lumen caliber (Just above celiac axis and in the hiatus portion of aorta (Fig. 2).

The patient was further investigated to look for whether calcification was atherosclerotic or pathological. The parathyroid hormone level was 27.3 (normal), antinuclear antibody was negative, C-antineutrophil cytoplasmic antibody (ANCA) was 3.48, and p-ANCA was 4.12 were within normal limit. Other routine blood investigations such as complete blood count, liver function test, and lipid profile are within normal limits. Erythrocyte sedimentation rate was 36 mm/h. The patient further undergone CT angiography which showed aortic wall calcification in the thoracic and upper abdominal aorta with up to 50% stenosis.

The patient was continued on antihypertensive, and thyroxine supplement was given for hypothyroidism. The patient was put on tablet nifedipine 20 mg bd and amitriptyline 10 mg. The patient got relief, and almost 75% reduction in symptoms was observed after 1 month.

DISCUSSION

The relationship between aortic calcification and coronary atherosclerosis remains controversial. The chest pain occurs mainly due to coronary atherosclerotic narrowing leading to ischemia, but very rarely patients' presents with chest pain due to narrowing of the thoracic aorta. There is one study which shows extracoronary plaque in aorta and coronary artery disease [3]. Another study showed that the severity of asymptomatic coronary and thoracic aortic plaques increases with age and number of cardiovascular risk factors [4]. Our patient is younger in comparison to others patients with calcification. Descending aorta calcification is more common than in ascending aorta and therefore calcification of descending aorta is better marker of increased burden of vascular disease than ascending aorta calcification. Calcification of aorta

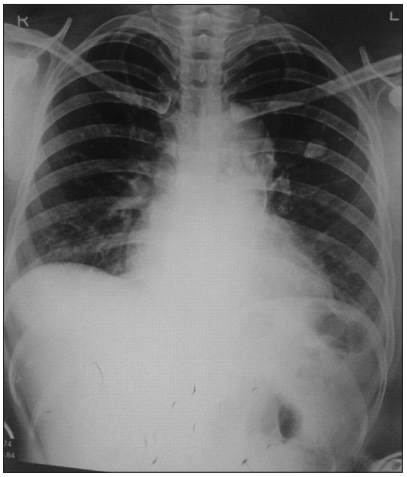

Figure 1: Chest X-ray showing mediastinal widening and few calcified parenchymal lesion in the left lower zone

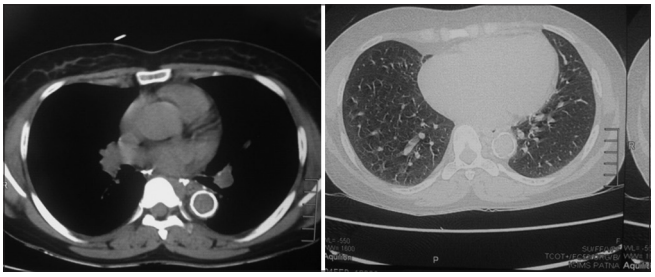

Figure 2: Aorta calcification showing solar eclipse sign

is often an age-related change, and the process may be initiated in early childhood. This may be an explanation for calcification in our patient [5]. There are studies on soldiers which have also proven the fact that the young adults can have advanced coronary artery disease and evidence of aortic plaques [6].

CONCLUSION

The calcification of aorta is common in older individual due to atherosclerosis. It has been easily identified on chest X-ray but rarely cause symptoms. Our case shows that calcification of aorta may lead to significant narrowing and symptoms. Hence, thoracic aorta calcification may be in differential for chest pain which mimicking as ischemic heart disease.

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