

## Giant Coronary Artery Aneurysm Mimicking a Paracardiac Mass

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Although either coronary artery aneurysm or coronary arterio-venous fistula may be found infrequently during coronary angiography, it is very rare to see combination of both structures. Here we present a case of coronary artery fistula combined with a large aneurysm. The aneurysm resembled a mass just beside the left heart border in the chest X-ray (CXR) film. The patient came to our hospital for chest pain. A grade 2/6 continuous murmur was noted over left upper sternal border. The mass was proved to be a coronary artery aneurysm at last by coronary angiogram after many examinations. Two coronary arterio-venous fistulae were also noted. This reminded us that coronary artery aneurysm could be one of the differential diagnoses of paracardiac mass during the interpretation of a CXR film. A high level of suspicion and a detailed physical examination combined with an adequate image studies, (such as echocardiography, computed tomography, magnetic resonance image, or coronary angiography) may provide accurate diagnosis and avoid painful, invasive examinations. (*Chang Gung Med J* 2003;26:133-7)

**Key words:** coronary artery aneurysm, coronary arterio-venous fistula (coronary A-V fistula), paracardiac mass.

It is very rare to see a big coronary artery aneurysm with fistula resemble a mass on the CXR. A paracardiac mass seen on the chest X-ray (CXR) film may be benign or malignant. To make an accurate diagnosis is very important because the prognosis differs greatly. Early diagnosis and accurate treatment results in a better prognosis for these patients. Careful physical examination for the patient may provide a hint and avoid other unnecessary, invasive and time-consuming procedures.

### CASE REPORT

A 74-year-old female patient, presented to our hospital with chest pain in Feb. 2001. She denied

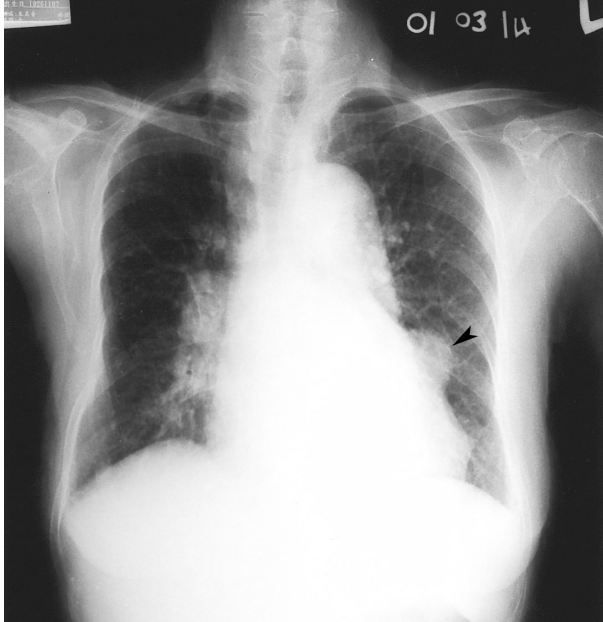
systemic disease such as hypertension, diabetes mellitus or previous chest trauma. She had a history of asthma and a drug refractory gastric ulcer. She had received surgery for stenotic lumbar spine in 1997. Physical examination showed a grade 3/6 systolic murmur at the apex and another grade 2/6 continuous murmur at left upper sternal border. CXR film (Fig. 1) showed a radio-opaque shadow at the left heart border. A bronchoscopy was arranged due to lung mass suspected, but no intra-bronchial lesion was found. A chest computed tomographic (CT) study showed a vascular lesion left to the heart, and a vessel like structure arising between aorta and pulmonary artery was connected to the lesion (Fig. 2). An echocardiographic examination was arranged,

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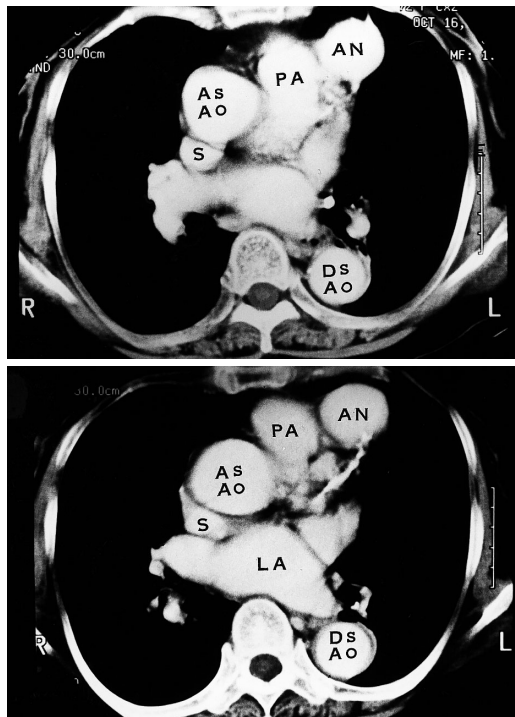
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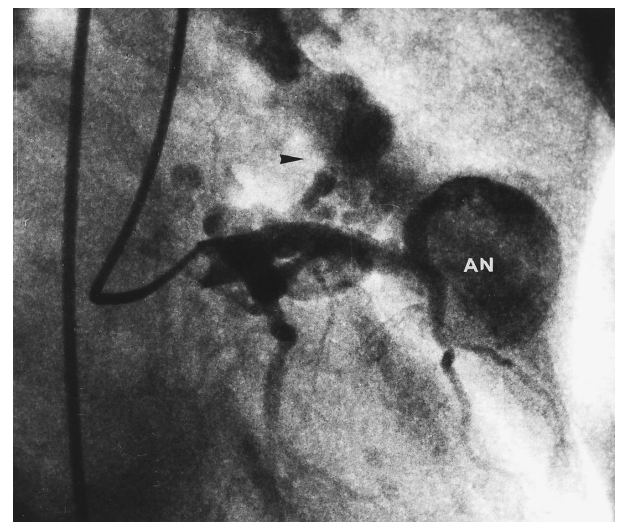


**Fig. 1** Chest X ray showed a mass just beside the left heart border (arrowhead).



**Fig. 2** Chest computer tomography showed a vascular lesion left to the heart. AsAo = ascending aorta, DsAo = descending aorta, AN = aneurysm, LA = left atrium, PA = pulmonary artery, S = superior vena cava.

which showed a torturous structure among the pulmonary artery, the aorta and the left atrium. There was a continuous flow in the abnormal structure and this finally drained into pulmonary artery. A coronary arterio-venous (A-V) fistula was suspected after the echocardiographic examination. Cardiac catheterization with angiography study revealed 2 coronary arterio-venous fistulae from the left anterior descending artery to pulmonary artery. A giant sacular aneurysm, 4.7 cm×4.9 cm (Fig. 3), originated from the first diagonal coronary artery was found. This structure occupied the left superior anterior aspect of heart border. The aneurysm was consistent with the left paracardiac mass on the plain CXR film. An oximetric study showed there was a 10% oxygen saturation step up from right ventricle to pulmonary artery. The pulmonary to systemic flow ratio ( $Q_p/Q_s$ ) was 1.6. This patient refused surgical correction for the coronary aneurysm or fistulae. A thallium 201 scan done later showed no evidence of ischemia or infarction. She was discharged and has been followed up uneventfully for more than 10 months.



**Fig. 3** Right anterior oblique caudal view of left coronary artery showed an aneurysm fed from a diagonal artery and coronary arterio-venous fistulae (arrowhead) from the left anterior descending artery to pulmonary artery. AN=aneurysm.

## DISCUSSION

A paracardiac mass could be a lung mass, a lymph node,<sup>(1)</sup> a bronchogenic cyst or atresia,<sup>(2)</sup> a pleural or pericardial cyst, or those of vascular origin.<sup>(3)</sup> Giant coronary artery aneurysms have also been reported as a cause of a paracardiac or mediastinal mass on echocardiogram previously.<sup>(4-6)</sup> But so far as we know, no similar coronary artery aneurysm combined with fistulae mimicking a paracardiac mass on plain CXR has been previously reported.

Coronary artery aneurysm is an abnormal dilatation of focal or diffuse segments of coronary artery. It may be a congenital anomaly, or secondary to other diseases, such as atherosclerosis, trauma, previous coronary intervention, mycotic emboli, Kawasaki's disease or systemic lupus erythematosus.<sup>(7)</sup> Abnormal flow pattern in the aneurysm may lead to thrombus formation with subsequent vessel occlusion, distal thrombo-embolization or even myocardial infarction.<sup>(8)</sup> The aneurysm may also present as an intracardiac mass once it is thrombosed.<sup>(9)</sup> It may mimic dissection of thoracic aorta if ruptured.<sup>(10)</sup>

A coronary A-V fistula is an abnormal communication between the epicardial coronary artery and another vascular structure. The structure drained by the fistula may be a cardiac chamber (ventricle or atrium), major cardiac vessel (vena cava, pulmonary artery or pulmonary vein) or other vascular structures such as coronary sinus or mediastinal vessels.<sup>(7)</sup> A coronary A-V fistula may lead to coronary ischemia, congestive heart failure or endocarditis.

Coronary artery aneurysm combined with a fistula is especially rare.<sup>(11)</sup> It may present both the features of coronary artery aneurysm and fistula and needs surgical correction.<sup>(12)</sup> It has been reported on one occasion in an 87-year-old female patient without symptom.<sup>(13)</sup> This suggests that coronary artery aneurysm associated with fistula may have a good prognosis even with such a pronounced structural abnormality. This kind of abnormality may present as a mass lesion in plain CXR. Transthoracic or transesophageal echocardiography, chest CT, or magnetic resonance image may help to define the anatomy. Finally, it can be confirmed with coronary angiography.<sup>(14-16)</sup> However, many of these are

painful and expensive to the patient and some of these examinations may prove to be unnecessary if a detailed physical examination is done on the patient.

It is very rare to find a large aneurysm mimicking a paracardiac mass as in this patient. It may be misinterpreted as a solid mass arising from the lung, which would require many time-consuming, and unnecessary examinations and tests (e.g. bronchoscopy in our patient). However, a careful physical examination, as with this patients, could identify a continuous murmur in this patient. The murmur may come from coronary artery fistula, patent ductus arteriosus, ruptured aneurysm of sinus of Valsalva, anomalous left coronary artery, pulmonary arteriovenous fistula or sequestration of the lung.<sup>(17)</sup> With detailed echocardiographic examination, it would suggest that the mass is of vascular origin, although final confirmation may need angiographic study.

It is concluded that a coronary artery aneurysm should be one of the differential diagnosis of a paracardiac mass. A high level of suspicion and careful physical examination may avoid many exhausting and painful examinations or other tests.

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## 一個類似心旁腫瘤的巨大冠狀動脈瘤

楊登堯 鄭乃仁 張其任 賴美成 柯毓麟

冠狀血管動靜脈瘻管或動脈瘤在冠狀動脈攝影偶而可見，但是兩者合併並不常見。我們提出一個冠狀血管動靜脈瘻管合併一個巨大的動脈瘤的病例報告。這個動脈瘤非常大，在一般的胸部X光就可看見一個在左心旁的腫瘤。這位病人因胸痛到本院就醫，理學檢查發現在胸骨上緣有一個連續性心雜音。在許多檢查之後，藉著冠狀動脈攝影證實此一位於胸部X光上的腫瘤是一個冠狀動脈瘤。冠狀動脈攝影同時發現了兩條冠狀血管動靜脈畸形。我們認為冠狀血管動脈瘤必須納入胸部X光上心旁腫瘤之鑑別診斷。高度的懷疑，細心的理學檢查再加上適當的影像檢查可以提供正確診斷並減少不必要且危險的檢查。(長庚醫誌 2003;26:133-7)

**關鍵字：**冠狀動脈瘤，冠狀血管動靜脈畸形，心旁腫瘤。

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