

## X-ray quiz: more than a coin lesion

### X光照片猜謎：不止於錢幣形病變

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#### Case

A 58-year-old lady with good past health attended the emergency department because of non-productive cough for three months. She had no constitutional symptoms or recent weight loss. She had no history of pulmonary tuberculosis. She did not smoke. Physical examination did not reveal any abnormality. A chest X-ray was taken (Figure 1).

The attending doctor missed the right apical opacity. She was discharged with cough mixture. A senior doctor later identified the opacity during the routine film review. The patient was then called back. She returned to the department about a week later, and still had cough with decreased exercise tolerance. Chest X-ray was repeated (Figure 2).

#### Questions

1. What are the differential diagnoses?
2. What further investigations would you perform?

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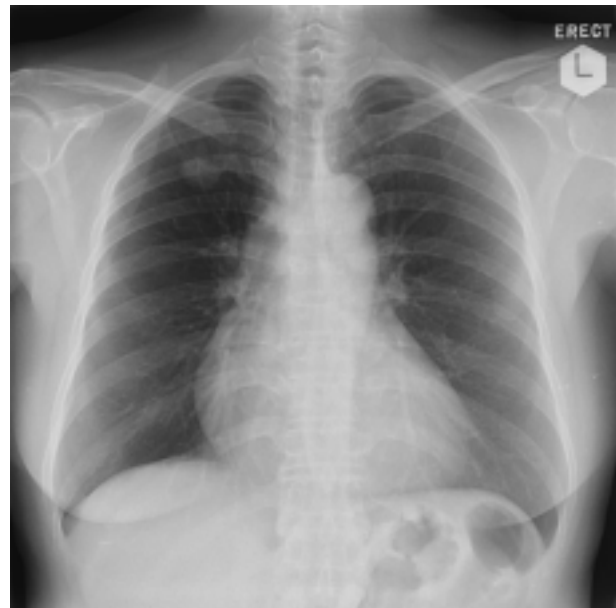


Figure 1.



Figure 2.

## Progress

An opacity of about 2.5 cm in diameter with an irregular border was seen in the right apex in both films. The cardiac silhouette was markedly increased (cardiothoracic ratio about 0.7) in the second film, compared with the first one. The lung fields were not congested. Bedside ultrasound was done and massive pericardial effusion was confirmed (Figure 3). She was admitted for further investigation. Pericardiocentesis was performed and yielded 500 ml of blood. Atypical cells were found in the cytology study. Subsequent bronchoscopy revealed a nodule in the right upper lobe and biopsy confirmed adenocarcinoma. Computed tomogram identified mediastinal lymphadenopathy and stage 4 carcinoma of the lung. She was finally referred to the oncology department for palliative chemotherapy.

## Discussion

Pericardial effusion can be caused by infectious or non-infectious process. Malignancy is one of the common aetiologies and accounted for about 15% of the patients in a case series.<sup>1</sup> It is usually found in patients with advanced malignancy.<sup>2</sup> However, it can be the



**Figure 3.** Bedside echocardiogram showing massive pericardial effusion (PE) in the parasternal long axis view.

initial presentation of a malignant disease.<sup>3-6</sup> Sometimes, the first presentation may even be cardiac tamponade. The development of cardiac tamponade depends on the rate of accumulation of pericardial fluid, pre-existing scarring of the pericardium and the existence of compensatory mechanisms.<sup>7,8</sup> The faster the collection of pericardial effusion, the higher will be the risk of cardiac tamponade. This is the reason why patients are more tolerant to massive pericardial effusion in the slowly progressing "medical tamponade".

Chest X-ray is not the standard investigation to identify pericardial effusion. The cardiac silhouette will only be enlarged with significant collection of pericardial fluid.<sup>7</sup> The main clue to raise the suspicion in this case is the change in the heart size in the serial chest X-rays. In the absence of features suggesting congestive heart failure, one should be alerted to further evaluation. The principal tool for diagnosis is echocardiography. The procedure is simple. Some types of patients are at high risk of pericardial effusion (Table 1).<sup>9</sup> They should be considered for bedside echocardiography. Diastolic collapse is the hallmark of cardiac tamponade and can be shown in echocardiography. The acute management of pericardial effusion is drainage. It can be done by pericardiocentesis, preferably under echocardiographic guidance.<sup>7</sup> For malignant pericardial effusion, recurrence is a problem but can be managed by balloon pericardiotomy, pericardiectomy or intrapericardial sclerosis.<sup>10-12</sup>

**Table 1.** Patients at high risk for pericardial effusion<sup>9</sup>

1. Unexplained hypotension and dyspnoea
2. Cancer with chest pain or dyspnoea
3. Congestive heart failure / enlarged cardiac silhouette
4. Blunt chest injury
5. Penetrating chest injury
6. Uraemia with chest pain or dyspnoea
7. Pericarditis
8. Systemic lupus erythematosus with chest pain or dyspnoea

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