Stop think: dyspnoea and an abnormal chest x-ray

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A 66 years old lady was referred to the medical admission unit with a history of increasing dyspnoea for the last 1-2 months. She recalled that 2 months ago she had a flu like illness and was prescribed a course of antibiotics. Her breathlessness had worsened 1-2 days prior to admission. She also complained of retrosternal discomfort that prevented her lying flat. There was no history of wheeze, phlegm production or chest pain. She had a past medical history of appendicectomy 30 years ago and hysterectomy 10 years ago for uterine fibroids. There was no history of any obstructive airway disease.

She was married with 3 grown up children and had retired as a shop assistant in a large department store. She had only smoked 5 cigarettes a day in her youth for a period of ten years. There was no history of keeping any pets or travel abroad over the last 12 months. There was no family history of asthma or any cardiac illness.

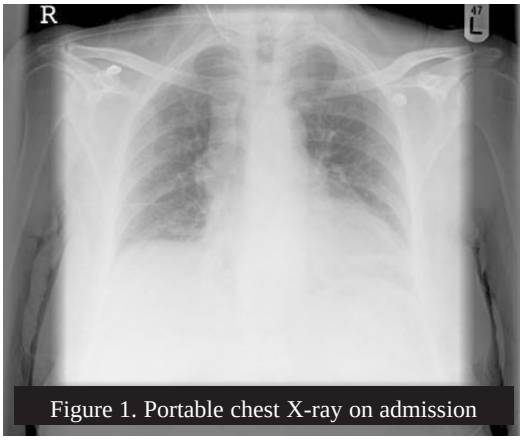

Figure 1. Portable chest X-ray on admission

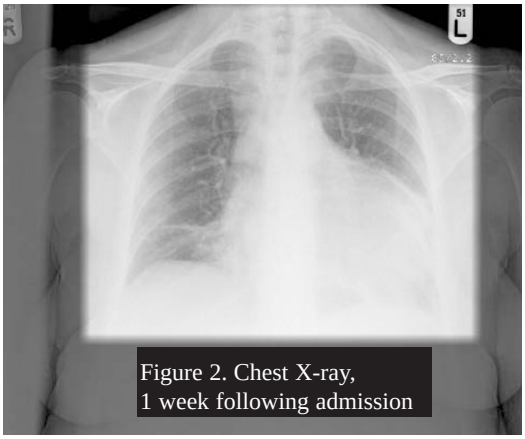

Figure 2. Chest X-ray, 1 week following admission

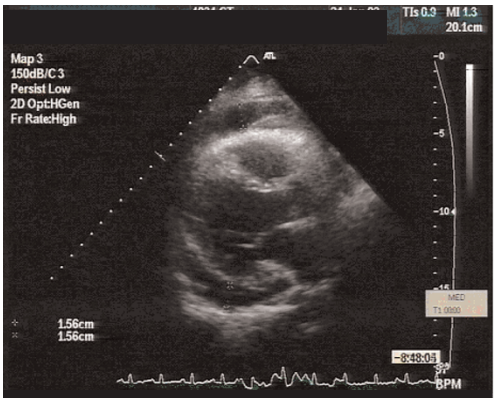

Figure 3. First echocardiograph

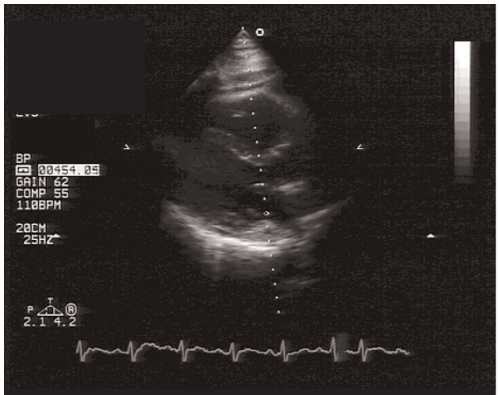

Figure 4. Repeat echocardiograph

On examination she was of average build and was dyspnoeic on exertion. Her ankles were not swollen. She was in sinus rhythm with a pulse rate of 78 beats per minute. The jugular venous pulse was elevated by 5 cms. above the sternal angle. The heart sounds were soft without any audible murmur and her blood pressure was 110/86 mm Hg. Pulsus paradoxus was present (Blood Pressure difference during inspiration and expiration was 12 mm Hg.). Her chest was clear and there were no wheezes or crackles. Examination of the abdomen was normal.

Full blood count, kidney function tests, d-dimer, troponin I and liver function tests were all normal. A chest x-ray at time of admission is shown in Fig 1. The lung function tests including FEV_1, FVC, TLC, RV and TLCO were all within normal range. ECG done on 2 occasions showed T wave inversion in the anterior leads. A chest x-ray was repeated after 1 week of admission (Fig 2).

Questions

1) How will you interpret both these x-rays?
2) What will your next investigation be?

Answers

1) The chest x-ray in figure 1 is a portable film and hence the cardiac shadow cannot be evaluated; however, the lung fields were clear. The second chest radiograph was a PA film and shows cardiomegaly.

2) The investigation of choice is an echocardiogram. This will usually tell us the cause of the patient's enlarged heart shadow on the chest X-ray. The two main causes of enlarged cardiac shadow on a chest x-ray are: pericardial effusion and cardiomyopathy. This lady's echocardiographic image is shown in Fig 3. This clearly shows an echo free space (fluid) around the heart. The diagnosis was pericardial effusion. As she remained stable, no active intervention was undertaken and an echocardiogram repeated (fig.4).

She underwent various investigations but no obvious cause of the pericardial effusion could be found. It was concluded that her pericardial effusion was secondary to a viral illness. She was discharged and followed up with another echocardiogram, which has confirmed that the pericardial effusion has not recurred.

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