CASE REPORT

A delayed diagnosis of cardiac tamponade

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SUMMARY

A 64-year-old female was referred to the on-call surgical team by her general practitioner with a 2-week history of feeling generally unwell; more short of breath with lethargy and myalgia with a 2-day history of right upper quadrant abdominal pain. On initial assessment she was tachycardic and an abdominal examination revealed a soft abdomen with right upper quadrant tenderness. An abdominal ultrasound scan revealed a distended gall bladder with the diameter of the common bile duct at the upper limit of normal. It also revealed free fluid within the abdomen, bilateral pleural effusions and a large left ovarian cyst. The medical team became involved and ordered a CT thorax and abdomen which showed a large pericardial effusion, bilateral pleural effusions, a small amount of ascites and a large left ovary; reported as appearances most consistent with malignancy. On further assessment by a cardiologist the patient showed signs of cardiac tamponade and she underwent urgent pericardiocentesis.

BACKGROUND

Cardiac tamponade is caused by impaired cardiac filling owing to increased pericardial pressure acting as an external force. It can be divided into acute cardiac tamponade which occurs within minutes owing to trauma, rupture of the heart or aorta or a complication of an invasive procedure. It can also occur subacutely, most likely associated with neoplastic, uraemic or idiopathic pericarditis. In these cases patients can present with non-specific symptoms such as dyspnoea, chest discomfort, a cough or peripheral oedema.¹ Signs can include low blood pressure, distended neck veins and muffled heart sounds. Diagnosis can be aided by clinical examination and supported with an ECG, chest x-ray and echocardiogram. Definitive treatment is achieved by removal of the pericardial fluid; pericardiocentesis. This fluid can be analysed to further evaluate the cause. The prognosis of cardiac tamponade varies depending on the cause and how quickly it is diagnosed and treated. Delay in the latter or presence of malignancy is more likely associated with a poorer prognosis.¹

CASE PRESENTATION

A 64-year-old lady saw her general practitioner with a 2-day history of gradual onset right upper quadrant abdominal pain with no radiation. This pain was made worse after eating, associated with nausea and relieved mildly by simple analgesia. The patient was referred to the on-call surgical team for further assessment of abdominal pain. In hindsight she had noticed feeling more short of breath over the past week, worse on exertion with non-specific

symptoms of feeling lethargic with myalgia but no fever. No chest pain or palpitations were reported.

On presentation she was tachycardic but her other vital signs were within normal parameters. She was not jaundiced and abdominal examination revealed a soft abdomen with tenderness in the right upper quadrant but no guarding. Ascites could not be demonstrated.

She had no previous medical problems, took no regular medication and had no significant medical history.

INVESTIGATIONS

Biochemical investigations revealed deranged liver enzymes with an alkaline phosphatase 289 IU/l (30–120 IU/l), aspartate transaminase 55 IU/l (5–40 IU/l), alanine transaminase 83 IU/l (7–56 IU/l). The C reactive protein was 58 mg/l (<3.0 mg/l) and the remaining biochemistry including amylase were normal. Haematological investigations were normal including haemoglobin.

Owing to the initial presentation of abdominal pain and abnormal liver function tests an abdominal ultrasound was requested by the surgical team. The entire abdomen was imaged and it revealed a distended gallbladder, with no gallstones and a common bile duct diameter at the upper limit of normal. Incidentally it showed the presence of free fluid within the abdomen, with bilateral pleural effusions and a multiloculated left ovarian cyst. The medical team was then contacted and the medical registrar recommended a CT scan.

CT of the thorax, abdomen and pelvis revealed a large pericardial effusion measuring 23 mm in depth (figure 1), bilateral pleural effusions, a small amount of ascites (figure 2) and a large left ovary in comparison with the right (figure 3), reported as having appearances most consistent with ovarian malignancy. The cardiologists were contacted and they performed a full cardiovascular and respiratory examination on the patient. They found she had positive Kussmaul's sign and pulsus paradoxus. Her heart sounds were not muffled and her chest was clear.

An echocardiogram was then performed by the cardiologist which revealed a large pericardial effusion with right ventricular wall collapse consistent with cardiac tamponade (figure 4).

DIFFERENTIAL DIAGNOSIS

A common cause of pericardial effusions is malignancy; most frequently originating from the lung, breast or lymphoma. Other common causes include uraemia, infections which can be viral; such as coxsackie and bacterial; mainly tuberculosis.^{2–3} More uncommon causes include connective tissue disease

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Figure 1 CT scan of large pericardial effusion.

such as systemic lupus erythematosus and hypothyroidism. Penetrative causes such as trauma to the chest area and iatrogenic causes need to be considered.

In this particular patient malignancy was the top differential diagnosis owing to the CT scan findings of an ovarian cyst with malignant appearances. Trauma was excluded as the patient had no history of this and she had had no recent surgery or medical interventions. A basic coagulation screen was found to be normal and therefore coagulation disorders were not explored further. An autoimmune screen to rule out vasculitis was not undertaken during her admission. Taking into account other symptoms, other causes that need to be considered are viral and bacterial infections or uraemia as she had non-specific symptoms leading up to presentation.

TREATMENT

Urgent pericardiocentesis drained 700 ml of blood-stained fluid from the pericardium and a drain was inserted to allow further drainage.

Cellular pathology showed blood-stained fluid so no protein could be identified. No malignant cells were seen. Microbiology showed a small amount of pus cells but no organisms and no growth in cultures after 48 h was observed.

Figure 2 CT scan slice showing ascites.

Figure 3 CT scan of the lower abdomen, viewing ovarian cyst.

OUTCOME AND FOLLOW-UP

This patient was kept in for observation overnight and the drain was removed the following morning. A repeat echocardiogram then revealed the pericardial effusion had not reaccumulated. Her observations remained stable and the abdominal pain had subsided considerably. She was discharged home and referred to the gynaecology team as an outpatient who reviewed the case at their multidisciplinary meeting. They concluded the ovarian cyst was benign and not likely to have contributed to the pericardial effusion. She underwent a pelvic ultrasound scan as requested by the gynaecologists to assess the ovarian cyst. The abdomen was not fully imaged, but the scan did not reveal further free intra-abdominal fluid. The ovarian cyst had not changed in size and was still felt to be benign in nature. Follow-up with cardiology in outpatients revealed no recurrence of the effusion after 4 months on repeat echocardiogram. On review of her blood tests, pericardial fluid aspirate analysis and resolution of symptoms with no further complications it was concluded that this patient had an idiopathic pericardial effusion. This was most likely owing to a viral infection although PCR was not performed at the time to conclude this.

DISCUSSION

This particular patient was admitted via the surgical team and underwent investigations appropriate in exploring her abdominal pain. Common diagnoses are most likely to be considered first and it is not unknown for doctors to forget to think broadly and consider atypical sources of a presenting complaint. In retrospect this illustrates how easily signs can be missed and investigations omitted when they do not appear relevant to the patient at that time.

Abdominal pain was the primary symptom that prompted this patient to seek medical attention. A study looking at all patients with pericardial effusions presenting to a city hospital over a 10-year period found abdominal pain to be a symptom in 61% of the cases.⁴ There are several other documented case reports in which abdominal pain is the presiding presenting complaint in patients with pericardial effusions. All patients in these case reports had cardiac tamponade on clinical assessment.^{5–8} Looking at similar case reports of patients presenting acutely with pericardial effusions, ascites is not a common symptom. One study looking into medical patients with cardiac tamponade found ascites to be more common where the cause was

Figure 4 Echocardiogram.

tuberculosis, idiopathic pericarditis or constrictive pericarditis without pericardial effusion.^{9–11}

This case demonstrates the importance of having a broad list of differential diagnoses in mind when reviewing patients with a specific symptom or group of symptoms. Although this patient's main concern was abdominal pain, a cardiac cause for this pain may have been relevant to exclude. The patient also complained of increasing shortness of breath over the past few weeks making a respiratory and cardiovascular examination appropriate to perform. This may have elicited some of the subtle signs this patient displayed. Further appropriate investigations would have included an ECG to rule out cardiac cause for her pain and may have given clues to the diagnosis. A typical ECG in a patient with cardiac tamponade is low-voltage QRS complexes or electrical alternans; alternate beat variation in direction, amplitude and duration of ECG complexes.¹²

In conclusion this case illustrates how cardiac tamponade, a potentially life-threatening condition can be missed. This patient had atypical symptoms and the specialist team became fixated on the abdominal pain making the diagnosis more difficult to attain. In reflection this case helps to reiterate the importance of doing full system examinations and thorough history taking on any patient who presents to us regardless of our specialty.

Learning points

- ▶ This case highlights the importance of examining the patient thoroughly rather than concentrating on one body system to come to a diagnosis.
- ▶ Abdominal pain is not a common symptom of pericardial effusions but there are other case reports illustrating that patients can present with such a symptom.
- ▶ It illustrates that not all causes of pericardial effusions can be found even when further specialist techniques are used as shown by previous research.

Contributors The corresponding author AM cared for the patient as the foundation year 2 doctor on the coronary care unit. GG was over seeing this care as the consultant cardiologist on call. AM wrote up the case report gaining permission from the patient and GG read through the preliminary drafts to ensure clinical details were correct.

Competing interests None.

Patient consent Obtained.

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