Findings that shed new light on the possible pathogenesis of a disease or an adverse effect

Unusual cause of pericardial effusion

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Summary

A 65-year-old Egyptian lady suffering from non-alcoholic liver cirrhosis was referred to our unit for evaluation of a massive pericardial effusion. Few weeks before presentation, she suffered from progressive abdominal distention and dyspnoea. She denied fever, rigors or other cardiorespiratory symptoms. Examination revealed shrunken liver, splenomegaly and ascites. Chest was clear to auscultation and heart sounds were distant. Chest radiograph showed cardiomegaly and clear lung fields. Abdominal ultrasound confirmed the results of abdominal examination. Transthoracic echocardiogram (TTE) revealed a massive pericardial effusion (PEF) and rheumatic mitral stenosis. Chest tomography showed PEF and clear lung fields. One litre of exudate was removed via TTE-guided needle pericardiocentesis. A pericardio-peritoneal shunt was suspected, which was confirmed via a radioisotopic study. This case is among very few cases that reported PEF in a cirrhotic ascetic patient secondary to a radio-isotopically confirmed pericardio-peritoneal shunt in the literature.

BACKGROUND

Development of pericardial effusion (PEF) in liver cirrhosis is of unclear aetiology. This case shows a very rare mechanism for the development of PEF in these patients.

CASE PRESENTATION

In September 2011, a 65-year-old Egyptian lady was referred to our unit for evaluation of a massive PEF.

Suffering of non-alcoholic liver cirrhosis since 3 years, hepatitis serology was negative and liver biopsy was not done. Few weeks before admission she developed gradual

progressive abdominal distension and dyspnoea. She denies fever, rigours, other cardiorespiratory or gastrointestinal manifestations. The chest radiograph revealed cardiomegaly, and transthoracic echocardiography (TTE) showed mild rheumatic mitral stenosis and a massive PEF.

The examination revealed a cachectic woman with extensive patches of vitelligo. She was afebrile, blood pressure of 90/60 mm Hg, pulse rate 100 beats/min and a respiratory rate 30/min. Pale, jaundiced and neck veins distended up to the angle of the mandible. Chest clear to auscultation, heart sounds distant with no gallop,

Figure 1 Transthoracic echocardiography, apical four-chamber view showing massive pericardial effusion (arrow).

murmurs or rub. Abdomen distended, non-tense or tender, shrunken liver, palpable spleen and ascites detected by shifting dullness. Palmar erythema and bilateral pitting ankle oedema.

INVESTIGATIONS

ECG revealed low voltage and atrial fibrillation. The haemoglobin was 9.3 g/dl, white blood cell count was 6600/cm³, platelet count 134 000/cm³ and prothrombin concentration 23%.

Bilirubin 2 mg/dl, protein 8 g/dl, albumin 2.6 g/dl, alkaline phosphatase 189 µ/l. Transaminases, creatinine, α-fetoprotein and thyrotropin levels were normal.

Chest radiograph showed flask shaped heart and oligemic lungs, TTE showed rheumatic mitral stenosis and a massive PEF (arrow, figure 1) and chest tomography showed a massive PEF with no lymphadenopathy or parenchymal abnormalities. Abdominal ultrasound showed shrunken liver, enlarged spleen and moderate ascites.

Ascitic fluid was a transudate with 75 polymorphs/cm³. One litre of straw yellow exudate with 500 polymorphs/cm³ was removed via a TTE-guided pericardiocentesis. The fluid culture grew multidrug-resistant pseudomonas sensitive to gentamicin, amikacin and polymixin. PEF rapidly reaccumulated and a pigtail pericardial catheter drained 15 litres of pericardial fluid over next the 3 days with disappearance of ascites, intravenous fluids were administered to maintain haemodynamic stability. A pericardio-peritoneal shunt was suspected. Technicium 99 nano-colloid was injected intraperitoneally in the right iliac fossa. Radioactivity was detected in the thoracic cavity 90 min and 4 h later confirming the presence of a pericardio-peritoneal shunt (arrows; figures 2–4).

DIFFERENTIAL DIAGNOSIS

- ▶ Tuberculous pericardial effusion
- ▶ Malignant pericardial effusion
- ▶ Purulent pericardial effusion

Figure 2 Technicium 99 nano-colloid was injected intraperitoneally in the right iliac fossa, radioactivity was detected in the thoracic cavity after 4 h confirming the presence of a pericardio-peritoneal shunt (arrows).

Figure 3 Radio-isotopic study 4 h.

TREATMENT

Intravenous gentamicin was prescribed.

OUTCOME AND FOLLOW-UP

The patient left the hospital against medical advice and she was lost to follow-up.

DISCUSSION

PEF was reported to be present in 63% of 27 alcoholic cirrhotics suffering of ascites. PEF was attributed to fluid overload.¹

A case of chronic PEF in a peritoneal dialysis patient due to the presence of pericardio-peritoneal communication was reported and PEF disappeared after stopping peritoneal dialysis.²

Cheung *et al* in 2004 reported for the first time that a pericardio-peritoneal communication is responsible for the development of recurrent PEF in a 41-year-old cirrhotic ascitic man. They postulated that fenestrations present in diaphragm and pericardium transmit ascitic fluid into pericardial cavity.³ Interestingly similar to our study PEF of that man was secondary infected with bacteria, that purulent infection probably played a part in accumulation of that massive pericardial effusion.

A similar communication was also reported in a man suffering from dilated cardiomyopathy and liver cirrhosis, and incomplete closure of an embryonic throaco-abdominal communication was postulated.⁴

Draining a large PEF in a short time associated with rapid disappearance of the ascites was the clue for us to suspect pericardio-peritoneal shunt presence and despite the patient clinical condition she was very cooperative allowing us to confirm shunt presence via a radio-isotopic study.

The current case is among very few cases that reported PEF in a cirrhotic ascitic patient secondary to a radio-isotopically confirmed pericardio-peritoneal shunt in the literature.

Learning points

- ▶ Pericardial effusion is not uncommon in liver cirrhosis patients.
- ▶ Rapid disappearance of ascites after drainage of pericardial fluid suggests the presence of a pericardio-peritoneal shunt.
- ▶ Presence of a pericardio-peritoneal shunt can be confirmed via a radio-isotopic study.

Figure 4 Radio-isotopic study 90 min.

Competing interests None.

Patient consent Obtained.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Fouda R, Ammar H, Sobhy E, Amin AM. Unusual cause of pericardial effusion. *BMJ Case Reports* 2012;10.1136/bcr-2012-006578, Published XXX

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