Missed Diagnosis

Opportunistic *Listeria* pericardial effusion

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Summary: A case is described of pericardial effusion due to *Listeria monocytogenes* infection in a woman with advanced carcinoma of the cervix, rheumatoid arthritis and on corticosteroid therapy. Focal infection with listeria in immunocompromised adults has a high mortality unless promptly diagnosed. The correct diagnosis may have been made if an unexplained pericardial effusion had been tapped.

Introduction

Adult listeriosis is a rare infection. Recently its role as an opportunistic pathogen has been recognized. Infections are mainly described in patients with renal transplants, liver disease, malignancy, immunosuppressive therapy and the acquired immunodeficiency syndrome.

Cardiovascular involvement is well documented; however, most of these are cases of endocarditis. We describe a case with a bacteriologically proven *Listeria monocytogenes* pericardial effusion in a patient with advanced carcinoma of the cervix and who was on long term corticosteroid therapy for rheumatoid arthritis.

Case report

A 58 year old woman presented with a 3-week history of progressive dyspnoea, peripheral oedema, malaise, weight loss, and an offensive vaginal discharge.

She had a past history of seropositive rheumatoid arthritis and was taking 7.5 mg daily of prednisolone after intolerance of non-steroidal anti-inflammatory drugs and penicillamine. There were no other previous medical problems.

On examination she was afebrile. There were bilateral pleural effusions with leg and sacral oedema but no ascites and no signs of cardiac tamponade. The jugular venous pressure (JVP) was not raised. She was tender in the upper abdomen without palpable masses or hepatosplenomegaly. She had a purulent vaginal discharge and an enlarged ulcerated cervix.

Chest X-ray confirmed bilateral pleural effusions and cardiomegaly. She had a normal full blood count and film with an ESR of 4, serum sodium 126 mmol/l, serum albumin 27 g/l, and an otherwise normal biochemical screen. A 24-hour urinary protein level of 0.27 g/24 h excluded nephrotic syndrome as the primary cause of the oedema. An electrocardiogram (ECG) showed a sinus tachycardia.

The pleural effusions were tapped with immediate symptomatic relief. The fluid was straw coloured with a protein content of 18 g/l, no bacterial growth and no malignant cells. Ultrasound confirmed the presence of a small pericardial effusion said to be haemodynamically insignificant.

Examination under anaesthetic revealed an exophytic growth arising from the cervix, clinically staged as 1B (FIGO Classification), and a pyometrium which was drained. A biopsy showed poorly differentiated squamous carcinoma. *Bacteroides* spp. were grown from vaginal swabs. Because of a low grade pyrexia and corresponding tachycardia this infection was treated with metronidazole. The discharge, pyrexia and clinical condition all improved.

A computed tomographic (CT) scan showed the pericardial effusion but no evidence of mediastinal or para-aortic lymphadenopathy. A magnetic resonance imaging scan showed that the primary tumour was more advanced than suspected with internal iliac lymphadenopathy. After a short period at home she was readmitted, very ill, with dyspnoea and an irregular pulse of 150 beats per minute. The JVP was now raised. There were signs of reaccumulated pleural effusions and a low grade spiking pyrexia. The effusions were tapped. An ECG showed a supraventricular tachycardia. Cardiac ultrasound again showed a minimal pericardial effusion with a distended inferior vena cava

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Accepted: 7 August 1989

and intra hepatic veins, supporting the diagnosis of heart failure. Digoxin and diuretics were started. Repeated blood cultures were negative. Broad spectrum antibiotics were started on admission but her condition deteriorated and she died.

A post mortem examination confirmed a large tumour extending from the cervix into the lower segment of the uterus and stuck to the colon. There was a solitary hepatic metastasis. The pericardium was enlarged but not tense. When opened 200 ml of pus was found in the pericardial cavity and a focus of necrosis in the myocardium. The heart valves and endocardium were normal.

Culture of the pericardial pus grew *Listeria monocytogenes*. The heart muscle showed areas of organizing infarction and a general diffuse lymphoid cell infiltrate of the type seen in toxæmic conditions.

Discussion

Listeria monocytogenes is a Gram-positive, non-spore-forming aerobic rod, distinguished from other diphtheroid organisms by its motility at room temperature and other growth characteristics,¹ especially enhanced growth at low temperatures. It may produce a wide spectrum of clinical syndromes ranging from a mild febrile illness during pregnancy, to a more commonly seen neonatal septicaemia with a high mortality. Meningoencephalitis may occur in neonates and adults. An increasing frequency of primary bacteraemia is being identified, in addition to central nervous system infection, in immunocompromised adults.² Patients with underlying malignancy, those on immunosuppressive therapy, especially corticosteroids, cirrhosis and the acquired immunodeficiency syndrome^{3,4} are particularly at risk. A common factor in the pathogenesis would seem to be impaired T-cell lymphocyte function.⁵

Focal infections including endocarditis are

increasingly common but pericarditis and associated pericardial effusion has only been described three times and in only two cases with bacteriological proof.⁶

This case demonstrates many of the typical features associated with listerial infection. The patient had an underlying malignancy and was on corticosteroids. Coincidental bowel pathology is a common factor in many cases⁷ and this may have been the portal of entry in this woman with direct extension of the tumour to bowel. However, unlike the majority of such infections² the blood cultures were negative. Delays in diagnosis contribute to the high mortality associated with listerial infection despite its sensitivity to antibiotic therapy.

Focal infections, especially those of the central nervous system have a high mortality rate. A primary bacteraemia or early diagnosis can lead to improved results. Blood cultures are usually positive. Cerebrospinal fluid culture is usually positive in central nervous system infection and biopsy material or pus should be sent for culture in relevant circumstances.

The recommended antibiotic treatment⁸ is ampicillin or amoxycillin 500 mg 4 times a day in combination with gentamicin in serious cases. Erythromycin, co-trimoxazole or rifampicin are alternatives. The duration of treatment may need to be prolonged if recurrence in immunosuppressed patients is to be avoided.

Listeria monocytogenes should be remembered as an increasingly common pathogen in the immunocompromised patient. In this case, unusually, the blood cultures were negative but the fact remains that the only way this infection might have been picked up was by means of a diagnostic tap of an unexplained pericardial effusion. It demonstrates that where deep seated infection is suspected and no organism identified focal abnormalities such as a pericardial effusion should be excluded as the site of infection.

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