CASE REPORTS

Primary meningococcal arthritis associated with adult respiratory distress syndrome

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Abstract

A previously fit and well 20 year old man with primary meningococcal arthritis of the left knee is described. Despite intensive search there was no evidence of extra-articular meningococcal infection. He subsequently developed adult respiratory distress syndrome as a rare and previously undescribed complication.

Arthritis which occurs as a secondary complication of meningococcal disease is well recognised and occurs in up to 2-10% of reported series.¹ Primary meningococcal arthritis occurring in the absence of extra-articular infection is very rare, however. Between 1897 and 1979 only 25 cases of primary meningococcal arthritis were reported,² and subsequently there have been another six.³ We report a previously fit young man with primary meningococcal arthritis, who developed an unusual complication of adult respiratory distress syndrome. To our knowledge this has not been described before.

Case report

A previously fit and well 20 year old man was admitted to the orthopaedic services with a five hour history of pain and swelling in his left knee. On examination he had a fever (39.6°C) with a tachycardia of 120/min. The left knee was hot, swollen, and tender with painful limited movements. Systemic examination was entirely normal. Investigations showed a leucocytosis of $19.5 \times 10^9/l$ (normal $4-11 \times 10^9/l$) with 88% neutrophils. Urea, creatinine, electrolytes, x ray of the knee, chest x ray, and electrocardiogram were normal. He underwent an arthrotomy with lavage of the left knee, under general anaesthesia, and 50 ml of purulent fluid was withdrawn. After the operation he recovered uneventfully, and treatment was started empirically with intravenous cephalosporins and metronidazole.

About 12 hours later he became acutely short of breath and cyanosed. He had bilateral crepitations and rhonchi. Arterial blood gases showed a pH 7.27, PCO_2 6 kPa, and PO_2 7.6 kPa with a saturation of 84%. Chest x ray showed bilateral patchy opacities (figure A). Blood pressure was 120/80 mmHg. He was transferred to the intensive therapy unit, where a Swan Ganz catheter was inserted. Pulmonary artery pressure was 25/16 mmHg and pulmonary wedge pressure 8 mmHg. A diagnosis of adult respiratory distress syndrome was made, and he was given assisted ventilation with positive end expiratory pressure. Microbiological examination of fluid

from his knee identified 'meningococcus sensitive to benzylpenicillin' (subsequently confirmed as *Neisseria meningitidis* group C subtype P1.2), and treatment was started with high dose intravenous benzylpenicillin. His clinical recovery continued very satisfactorily and he was extubated about 24 hours later. Arterial blood gases, urea, and electrolytes were normal, and a chest x ray showed clearing of the previous opacities (figure B).

He was subsequently mobilised on a general ward and antibiotics continued. General clinical examination on numerous occasions was normal. Multiple blood and urine cultures (including initial cultures before starting antibiotic treatment) and swabs from various bodily sources did not grow any organisms. Serum complement and immunoglobulin concentrations were normal. He was discharged from hospital three weeks later, having made a complete recovery.

Discussion

Arthritis as a complication of meningococcal infection has been described.¹ It usually occurs in the presence of reported meningococcaemia (either acute or chronic) or with isolation of the organism from other sources such as the throat, with additional features of meningococcal infection, such as fever, variable skin lesions, meningitis, or systemic involvement.²⁻³ The arthritis may be monoarticular, oligoarticular, or polyarticular,⁴⁻⁵ either septic⁵⁻⁶ or sterile,⁴ or associated with tenosynovitis.⁷ Occasionally a 'reactive' postinfective arthritis may be seen. This tends to appear after meningococcal infection and is thought to be immunologically mediated.⁸⁻¹⁰

Primary meningococcal arthritis, however, which is meningococcal infection primarily affecting a joint, in the absence of proved extra-articular infection, is extremely uncommon.

The case described is one of primary meningococcal arthritis as *N meningitidis* was grown only from the affected knee joint and was not cultured from any other site despite intensive efforts. Furthermore, there were no other clinical features of meningococcal disease. In addition, the patient developed clinical and radiological features of adult respiratory distress syndrome shortly after arthrotomy and lavage, and required assisted ventilation.

Acute pulmonary oedema has been described as part of the meningococcal shock syndrome in children and is a potentially life threatening complication.¹¹ It is thought that this is due to an increase in pulmonary capillary permeability because of sudden bacteraemia.¹¹ To our know-

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Chest x ray during (A) and after (B) the development of adult respiratory distress syndrome.

ledge this has not been described before in primary meningococcal arthritis. Meningococcal arthritis and bacteraemia have been described following arthroscopy,¹² and, possibly, the arthrotomy and lavage performed in our patient induced a transient bacteraemia with 'seeding' in the pulmonary capillary bed.

Antibiotic treatment, which was empirically started immediately after the arthrotomy, might have accounted for the negative cultures at the time of adult respiratory distress syndrome (although initial bacteriological cultures were also negative). Antibiotics might also have contributed to the rapid recovery from a complication which otherwise carries a high mortality.¹¹ We emphasise that a septic monoarthritis may occur as the only manifestation of meningococcal infection, and this may be associated with life threatening systemic complications.

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