Case report

Bacterial endocarditis presenting as acute monoarthritis

A DOUBE AND A CALIN

From the Royal National Hospital for Rheumatic Diseases, Bath

SUMMARY The presentation of a pig farmer with acute arthritis of the shoulder, cardiac murmurs, and *Streptococcus suis* growing on blood cultures highlights one of the rheumatological presentations of bacterial endocarditis. The need for a thorough general medical examination together with synovial fluid and blood culture in patients with acute monoarthritis is emphasised. The suggestion that acute arthritis related to endocarditis is in nature truly septic, rather than mediated by circulating immune complexes, is supported.

Key words: septic arthritis.

Musculoskeletal manifestations occur in nearly half of patients with bacterial endocarditis and may antedate that diagnosis by many months.¹ In one study, of 14 patients with arthritis at the time of admission to hospital, eight had monoarticular involvement and six had oligoarticular involvement.² The possibility of bacterial endocarditis must be considered in patients presenting with musculoskeletal symptoms, and a high degree of suspicion may allow early diagnosis and treatment of this often fatal disease.

Case report

A 55 year old male farmer was admitted as an emergency, having been entirely well until three days previously. On his farm he kept nearly 1000 pigs, usually cared for by a hired hand. In the two weeks before admission six pigs had developed a meningitic illness, considered by a veterinary surgeon to have been caused probably by *Streptococcus suis*, a recognised pathogen causing septicaemia and meningitis in swine. As his hired hand was on holiday the patient had been in close contact with his pigs, including those with meningitis, over the week before admission. Three days before admission he experienced overnight rigors and the following day

noticed an extremely painful right shoulder. A non-steroidal anti-inflammatory drug gave incomplete relief of his pain. The day before admission he noticed a painful red swollen area on the anterior aspect of his right knee, overlying the patella, and a painful red swollen area on the volar aspect of the base of the left thumb.

On admission he was afebrile and remained so throughout his hospital stay. There were areas of superficial inflammation on the anterior aspect of the right knee and at the base of the left thumb. His right glenohumeral joint was mildly swollen with severe pain restricting any movement. There were no peripheral stigmata of bacterial endocarditis, but a soft early diastolic murmur was heard at the apex and left sternal edge. His blood pressure was normal and there was no cardiac failure.

The right shoulder was aspirated and 2 ml of pus obtained. No organisms were seen with Gram stain, but the following day *Streptococcus suis* was grown on synovial fluid culture and also from all eight blood culture bottles taken on admission. His diastolic murmur was noted to be louder, with a late systolic murmur at the apex and left sternal edge. In view of the possibility of endocarditis, treatment with intravenous penicillin and streptomycin was started, replacing the intravenous flucloxacillin prescribed after joint aspiration. These antibiotics were continued for four weeks, as for bacterial endocarditis. An echocardiogram performed eight days after

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Correspondence to Dr A Doube, Royal National Hospital for Rheumatic Diseases, Upper Borough Walls, Bath BA1 1RL.

admission showed mitral valve prolapse with Doppler evidence of mild mitral regurgitation. The diastolic murmur became inaudible during the first week of treatment and his shoulder settled in four days. The areas of superficial inflammation at the knee and thumb resolved within two days.

Discussion

Musculoskeletal symptoms have been noted in 44% of patients with bacterial endocarditis, occurring as one of the first symptoms in 27%.¹ Synovitis was noted to be a common manifestation, occurring acutely or subacutely in 31% of patients, and two thirds of these had monoarticular arthritis. Most patients developed arthritis before their bacterial endocarditis was diagnosed, the delay in diagnosis varying between one week and 11 months with a mean of 13 weeks.

The reviews of both Churchill *et al*¹ and Myers and Commerford² report the synovial fluid to be sterile and consider an immune complex mediated mechanism to be the explanation of the synovitis. Wofsy, however, reports a patient with endocarditis in whom, although the synovial fluid culture was negative, culture of synovial tissue obtained by biopsy resulted in a growth of *Viridans streptococcus*.³ Moreover, Good *et al* suggest that delay in arthrocentesis may explain the finding of negative synovial fluid cultures.⁴ They describe a patient presenting with oligoarticular arthritis in whom culture of the initial aspirate of the ankle was positive for the β haemolytic group B streptococcus, whereas culture of a repeat aspirate performed three days later and before any antibiotic treatment was negative. Culture

of the synovial fluid obtained early in the illness of our patient was positive. It is conceivable that the arthritis associated with bacterial endocarditis is truly septic rather than mediated by circulating immune complexes, the organism being initially recoverable from the synovial fluid, but subsequently being confined to the synovial tissue. Such a situation has been postulated to occur in gonococcal arthritis. After intra-articular injection of live *Neisseria gonococci* the synovial fluid has been shown to be sterile after two hours, while synovitis persists, possibly in response to local release of bacterial lipopolysaccharide.⁵

Bacterial endocarditis needs to be considered in any patient presenting with arthritis, particularly monoarthritis. Synovial fluid may yield the offending organism early in the disease, but is usually negative later. Synovial biopsy should be considered if there is a strong suspicion of endocarditis, particularly if blood cultures are negative.³

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