Contents lists available at ScienceDirect

Asian Pacific Journal of Tropical Biomedicine

journal homepage:www.elsevier.com/locate/apjtb

Document heading doi:10.1016/S2221-1691(12)60085-9

A child with *Erysipelothrix* arthritis-beware of the little known

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ARTICLE INFO

Article history:
Received 10 October 2011
Received in revised form 2 November 2011
Accepted 8 December 2011
Available online 28 June 2012

Keywords:
Erysipelothrix rhusiopathiae
Osteomyelitis
Septic arthritis

ABSTRACT

Erysipelothrix rhusiopathiae is an established animal pathogen while the zoonotic infections in humans are rarely reported. Infections occur after exposure to animals or animal products that are mostly occupational in adults. Here we report in a child for the first time septic arthritis and osteomyelitis without an identifiable risk factor. A 5-year-old male child was admitted with pain in the left hip joint and inability to bear weight on the limb. Clinical examination followed by radiological and magnetic resonance imaging was suggestive of septic arthritis. *Erysipelothrix rhusiopathiae* grew from peroperative joint specimen. The infection was resolved following arthrotomy, joint lavage and antibiotic therapy.

1. Introduction

The common organisms responsible for septic arthritis in children are *Staphylococcus aureus* and *Streptococcus* spp., while *Neisseria gonorrhoeae, Haemophilus influenzae, Escherichia coli* and *Pseudomonas aeruginosa* are far less frequently encountered[1]. *Erysipelothrix rhusiopathiae* (*E. rhusiopathiae*) is a gram-positive, non-sporing rod, recovered from the tonsils or the digestive tracts of animals. In humans, it can cause mild cutaneous (erysipeloid) or diffuse cutaneous infection in persons occupationally exposed to animals[2]. Rarely septic arthritis and other serious systemic complications like septicaemia and endocarditis can occur[3]. To our knowledge, all reported cases of septic arthritis caused by *E. rhusiopathiae* so far are in adults[4-10]. We report a case of septic arthritis of the hip in a child caused by this organism.

2. Case report

A 5-year-old male child was admitted with pain in the left hip joint and inability to bear weight on the limb. He had a history of fall from height of three feet at home seven days earlier. On admission, the child was afebrile and there was painful limitation of passive motion of the affected hip. Child's cardiovascular, respiratory, neurological systems were normal. The white blood cell count was 10 800 cells/mm^3, ESR was 121 mm and the C-reactive protein 24 mg/L. An increase in the medial joint space was noted on the plain radiograph of the pelvis suggestive of an effusion (Figure 1) which was confirmed by ultrasonography. Magnetic resonance imaging (MRI) scan showed evidence of osteomyelitis of the left proximal femur with septic arthritis and pyomyositis (Figure 2). Radioisotope bone scan suggested increased perfusion and increased pooling of tracer over left thigh region. Arthrotomy of the the hip was performed and swabs taken from the joint were sent for microbiological examination and synovial tissue was sent for histopathological analysis. Copious lavage of the joint was performed, the wound was closed and a hip spica was applied. Postoperatively, the child was given intravenous amoxicillin-clavulanic acid (300 mg) twice a day and gentamicin (20 mg) twice daily empirically. The child remained afebrile and pain was abated in the post-operative period. Histopathology reports suggested features of septic arthritis. Gram stain of the joint aspirate showed pus cells and slender Gram positive bacilli. Bacteriological culture on 5% sheep blood agar and chocolate agar grew alpha haemolytic colonies after 48 h of incubation in CO_2

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with negative catalase result and non-motile. The isolate was identified as *E. rhusiopathiae* by Vitek 2 system. It was susceptible to ampicillin, ciprofloxacin, erythromycin, clindamycin and resistant to cotrimoxazole, gentamicin and vancomycin. Amoxicillin-clavulanic acid therapy was continued for a total of 21 days. The child's post-operative recovery was satisfactory and he was discharged with hip spica which was retained for four weeks. Four months later, he remained well with normal hip joint function.

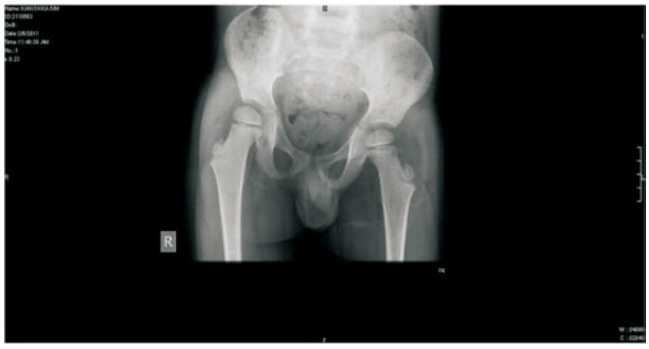

Figure 1. Radiograph of the pelvis showing increase in medial joint space on left side as compared to right side.

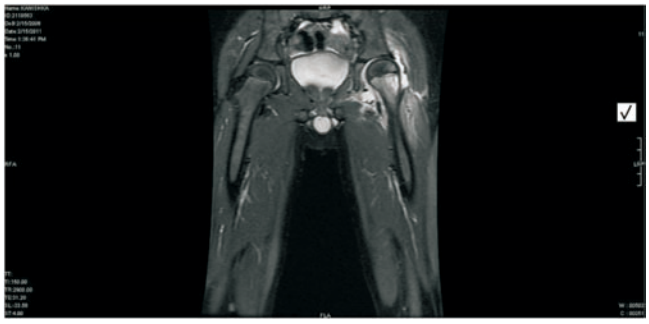

Figure 2. MRI scan of pelvis showing altered enhancing marrow signal intensity involving the left proximal femur and left hip joint effusion with enhancing synovium.

3. Discussion

Most *E. rhusiopathiae* infections in humans probably occur through open wounds. Skin penetration appears to be the portal of entry in all adults with septic arthritis reported previously. All patients were reported to have a breach in the skin in the vicinity of the infected joint that was sustained during occupational or leisure activities[4-10]. Six of these eight adults who developed septic arthritis suffered from one or more conditions associated with immune-compromise including terminal renal insufficiency, diabetes mellitus, chronic lymphocytic leukaemia, systemic lupus erythematosus and rheumatoid arthritis. Some were reported to use systemic or intra-articular steroids and alcohol consumption which again might have compromised the immune system. The child we report had no wound or skin lesion, was not immunocompromised and had no contact with animals. Thus, the source of the pathogen, the portal of entry of the organism and reason for the lack of host defences in this child remain unclear.

All the adult patients with septic arthritis recovered with surgical interventions and antibiotic therapy with one exception that underwent knee arthrodesis[10]. The child in this report also responded favourably to surgical decompression of the joint and antibiotics. This is probably on account of the fact that most strains of this organism are highly susceptible to penicillins, cephalosporins, erythromycin, and clindamycin[3].

Further, human infection with *E. rhusiopathiae* is likely to be under-diagnosed due to the slow and fastidious nature of growth. It is also very well possible that this bacterium might be overlooked or overgrown by other bacteria such as *Staphylococcus aureus* and *Streptococcus pyogenes*. Therapeutic agents like vancomycin and gentamicin in joint infections are not useful in treating *Erysipelothrix* arthritis due to the organisms' inherent resistance to these drugs. High index of suspicion along with prompt and careful microbiological investigations would help in the etiological diagnosis of such rare presentations.

Conflict of interest statement

We declare that we have no conflict of interest.

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