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MULTIORGAN INVOLVEMENT DUE TO *SALMONELLA TYPHI*: CASE REPORT

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SUMMARY

A 12-year-old male presented with osteomyelitis and poliartthritis; after hospitalisation he developed subcutaneous abscesses, endocarditis and pericarditis. The diagnosis of typhoid fever was made when blood cultures grew *Salmonella typhi*. The patient was cured with a regimen of ceftriaxone and ciprofloxacin.

CASE REPORT

A 12-year-old boy was hospitalised with the main complaint of painful and swollen joints accompanied with fever for eight days. There was no history of recent trauma, gastrointestinal disturbances or any other significant pathology. Family history was non contributory. On examination, he was febrile (38.4°C) and tachycardic (95/min); the left shoulder, the right elbow, the left knee and both ankles were swollen, hot and extremely painful when touched but no fluctuation was elicited; the liver was four centimetres below the right costal margin, uniform and non tender; all other systems were normal. Laboratory investigations revealed: total leukocyte count 13 000/mm³ with a normal differential; haemoglobin 11.3 g/dL; ESR 125 mm/1 hour; Widal test positive at 1/20 dilution; all other investigations including malaria smear, sickle cell prep and HIV antibodies were normal; blood cultures could not be performed. Radiographic investigations showed the chest was normal and all involved joints showed periarticular soft tissue swelling; the left knee and left ankle had abnormalities compatible with periostitis and severe osteomyelitis (Figure 1). Cloxacillin and ampicillin were started intravenously. No major clinical changes occurred until day seven after hospitalisation when a generalised rash was noted;

ampicillin was discontinued. The patient remained febrile; on day 16 the temperature was 38.6°C and all affected joints were still hot and tender. On day 18 a grade III diastolic murmur was noted along the left sternal border; no peripheral signs of endocarditis were noted. Antibiotics were discontinued for 36 hours and the patient was taken to Mulago Hospital in Kampala. Cardiac echocardiography revealed a vegetation in the right ventricle outflow tract below the pulmonary valve and mild pulmonary regurgitation; the parietal pericardium was thickened and there was minimal effusion. *Salmonella typhi* resistant to ampicillin grew from two blood samples obtained in the microbiology laboratory. The patient returned to our hospital and was put on ceftriaxone and four days later he was markedly improved; he was afebrile but the left arm and left foot were still hot, swollen and painful. The swelling in the left arm had become fluctuant and 500 ml of pus were drained (bacterial cultures could not be obtained); the patient improved progressively, became afebrile and the cardiac murmur disappeared. Ceftriaxone was given for a total of six weeks followed by one month of ciprofloxacin. At the time of discharge, five months after admission, the joints were no longer inflamed; total leukocyte count was 8,800/mm³ and ESR 62 mm/1 hour. He had a limited range of motion of the left knee and was using crutches for ambulation.

Figure 1

Panel A: Anterior view of left knee. Significant periostitis of the tibia mostly medial with endomedullary channels distally very suggestive of osteomyelitis; there is bone destruction of the medial metaphysis and probable medullary abscesses. Progression through the growth cartilage with some epiphyseal foci noted. Periostitis of the distal third of the femoral diaphysis with endomedullary channels



Panel B: Lateral view of left ankle. The distal tibia shows similar characteristics than in the knee. There is a large effusion extending towards the astragalus



The patient was seen in good condition three and five months later. The only sequela was a reduced extension of the left knee; the cardiac murmur could not be heard.

DISCUSSION

The lack of gastrointestinal symptoms in our patient and his unusual presentation provoked that the main diagnoses entertained on admission were septic arthritis, rheumatic fever and pyomyositis. Due to the inability to perform bacterial cultures, in many areas of Africa, the diagnosis of typhoid fever is still based on the Widal test. This serological test is not very reliable due to its lack of standardisation and low sensitivity and specificity (1). In our patient, it was not until blood cultures were obtained after the development of endocarditis and pericarditis - that we reached the correct diagnosis and administered the appropriate treatment.

Although rare, endocarditis (2,3), soft tissue abscesses (4-6), arthritis -either reactive or septic (5,7-9) and osteomyelitis (4,5,8) have been reported among patients with *Salmonella typhi* infection.

This case points out to the protean manifestations of typhoid fever (10). The presentation of our patient was highly unusual as many rare complications were combined. A high degree of suspicion is necessary, especially in areas of high endemicity, in order to obtain the appropriate diagnostic tests and administer the curative antimicrobials without delay. Diagnostic confusion with other pathological entities may create in a specific area a mistaken sense of the rarity of this serious but treatable infection.

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