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Klebsiella Pneumoniae Osteomyelitis in Sickle Cell Anemia

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Sickle cell anemia is a hereditary hemoloytic disorder with an autosomal recessive pattern of inheritance. Cases of sickle cell anemia have been reported from our country since 1952(1) with an increased incidence in certain communities like Mahar, Chamar, Agri and other tribal people(2).

Pyogenic infection is the single commonest cause of morbidity and mortality in these patients, particularly in children below the age of 5 years. Functional hyposplenia leading to decreased opsonic activity which is required to phagocytose organisms such as *Salmonella, Staphylococci, Pneumococci* and *E. coli* has been postulated as the incriminating factor towards increased frequency of infections as microinfarcts in the bones act as a nidus for infection. However, the association of sickle cells anemia and multiple osteomylitis due to organisms like *Klebsiella pneumoniae* is very rare, and we report one such case.

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Case Report

A six-year-old-male child, born of a 2nd degree consanguinous marriage, belonging to the Mahar community was hospitalized with a history of high grade fever with chills and pain in the small joints of hands and feet of 15 days duration. There was no past history except for having received One blood transfusion at a peripheral centre. Family history was non-contributory. Examination revealed an averagely nourished, highly febrile child with tachpnea and tachycardia. There was pallor but no icterus, cyanosis, patechiae or lymphadenopathy. Systemic examination revealed a moderate splenohepatomegaly. On local examination of the small joints of hands and feet, there were acute signs of inflammation with restriction

of movements, associated with generalized tenderness over the long bones. Other systems were unremarkable.

Differential diagnoses on admission were: (c) Vaso-occlusive crisis in sickle cell anemia, *(b)* Septicemia with multiple osteomyelitis, (c) Systemic onset juvenile rheumatoid arthritis.

Investigations revealed: hemoglobin - 7.0 g/dl, total WBC count of 14,000/cu mm with polymorphonuclear leucocytosis. Hemoglobin electrophoresis showed HbS of 82%, while both parents and the three siblings had sickle cell trait with HbS ranging from 21.5% to 32%. Routine examination of urine and culture were negative. Widal test and CSF examinations were not contributory. Blood cultures done on three consecutive occasions consistently grew *Klebsiella pneumoniae* sensitive to cefotaxime, ciprofloxacillin and amikacin. Surgical aspirates also grew *Klebsiella pneumoniae.* Blood gas analysis revealed metabolic acidosis.

Radiograph of chest and of the long bones on admission were normal. 99 Tc bone scan showed areas of cellulitis on the left foot and around the middle third of tibia and fibula bilaterally. Radiographs repeated after two weeks were suggestive of areas of multiple osteomyelitis which showed intracortical symmetrical diaphyseal longitudinal fissuring *(Fig. 1).*

On admission, the child was given crystalline penicillin and chloramphenicol intravenously for 4 days along with packed cell transfusions and other supportive care. Antibiotics were changed later as per the sensitivity reports. Patient was started on intravenous cefotaxime and amikacin. The osteomyelitic areas were also surgically aspirated. The child became afebrile within 5 days and was discharged after seven weeks of antibiotic treatment.

Discussion

Pyogenic osteomyelitis is a known complication in patients with sickle cell anemia. Although, there have been many reports of salmonella osteomylitis in patients with sickle cell anemia since 1925, when Carrington and Davinson(3,4) reported the first case, *Klebsiella* osteomyelitis has hardly been reported except in one case(5). Other common organisms causing osteomyelitis in these patients are *Staphylococci, Pneumococci* and *E. coli(6,8).*

Few organisms like *H. influenza, Shigella sonnei, Actinomycetes, Bacterioides, Melaninogenicus, Proprioniobacterium, Streptococcus* and *Proteus mirabilis* are even less

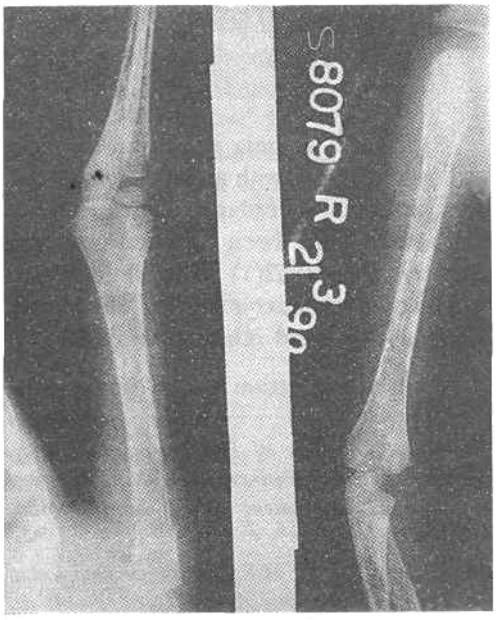

Fig. 1. Radiograph of long bones showing intracortical symmetrical longitudinal fissuring at multiple sites.

common(9,10). According to studies carried out, infarction of bones mimics osteomyelitis very closely, both clinically and radiographically(ll,12). Some authors, however, suggest that an entire bone involvement, longitudinal intracortical diaphyseal fissuring and overabundant involucrum formation(5). The only confirmatory evidence for osteomyelitis in such patients is a positive growth of organisms on cultures of blood and aspirated pus, if any. Management is not difficult if organisms are sensitive to available antibiotics and surgical aspiration may be indicated.

In summary, this patient presented with multiple osteomyelitis due to an uncommon organism like *Klebsiella pneumoniae.* Although rare, it should be considered as one of the organisms causing osteomyelitis in patients with sickle cell anemia. Contrary to earlier reports, conservative management alone may not be adequate, thereby warranting surgical aspiration(13).

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