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MANIFESTATIONS OF OSTEOMYELITIS IN SICKLE CELL ANAEMIA: A CONCERN FOR THE MANAGEMENT OF THE PATIENTS

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Abstract

Osteomyelitis can happen if a bacterial or fungal infection enters the bone tissue from the bloodstream, due to injury or surgery. Most often the bacteria are staphylococcus, but in sickle-cell children, both salmonella and staphylococcus are implicated. The bacteria are haematogenously disseminated and deposited in the trabecular bone or marrow, usually in the metaphysis of the proximal tibia or distal femur. Oteomyelitis manifests in patients with sickle cell anaemia when there is infections thorough some bacteria and could affect the bones with attendants effect in the activity of bone marrow which will affect the solid phase of blood and the quality of lives of the sickle cell anaemia patients. Preventive measures such personal hygiene should be adopted to avoid the danger such inflammation could cause in the patients.

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Introduction:-

Sickle cell disease refers to a set of inherited haemoglobin problems characterized through a predominance of extraordinary sickle haemoglobin in erythrocytes (Rees et al., 2010; Obeagu et al., 2015; Obeagu, 2018).

Sickle cell anaemia, which ends up from homozygous inheritance of sickle haemoglobin from each parents, is the maximum not unusual place and intense shape of sickle cell sickness. On deoxygenation, sickle haemoglobin undergoes a conformational alternate that promotes intracellular polymerisation, which results in distortion of the everyday biconcave erythrocyte disc into the extraordinary and pathological crescent shape (Swem et al., 2018; Obeagu, 2018; Obeagu et al., 2022). The ensuing haemolytic anaemia manifests as recurrent vaso-occlusion and organ harm that collectively motivate good sized morbidity and early mortality (Rees et al., 2010).

Worldwide, sickle haemoglobinopathies cause a good sized burden of sickness that isn't effectively addressed (Weatherall, 2010; Weatherall, 2011; McGann, 2014).

Accurate facts are lacking, however the international estimate for neonates born with sickle cell sickness every 12 months is 400 000, inclusive of 300 000 with sickle cell anaemia.

The finest burden is visible in sub-Saharan Africa, wherein greater than 75% of all sickle cell sickness occurs, with this share projected to boom through 2050 (Piel et al., 2013).
In Africa, sickle cell sickness contributes extensively to mortality in youngsters more youthful than five years and, therefore, limits development closer to accomplishing UN Sustainable Development Goal 3, Good Health and Well-Being, which incorporates the discount of adolescence mortality (Grosse et al., 2011; Ware, 2013).

Osteomyelitis can happen if a bacterial or fungal infection enters the bone tissue from the bloodstream, due to injury or surgery (Schmitt, 2017)**.** Staphylococcus is the organism responsible for 90% of cases of acute and chronic osteomyelitis (Kalinka et al., 2014). Other organisms include, Haemophilus influenzae and salmonella infection with the latter may occur as a complication of sickle cell anaemia.

Haematogenous osteomyelitis begins with entry of bacteria through a break in the skin or mucosa from otitis, pharyngitis, respiratory tract infections, or urinary tract infections, the physiological status of the host is a determinant factor (Marais et al., 2014). Most often the bacteria are staphylococcus, but in sickle-cell children, both salmonella and staphylococcus are implicated. The bacteria are haematogenously disseminated and deposited in the trabecular bone or marrow, usually in the metaphysis of the proximal tibia or distal femur. Sluggish blood flow in the metaphysis provides an ideal milieu for bacterial replication (Obeagu, 2023).

Osteomyelitis in Sickle Cell Anaemia
Bone infection is a serious complication in SCA and a major cause of hospitalization. Previous researchers have reported that SCA patients become very susceptible to unusual organisms in which a preponderance of salmonella-caused osteomyelitis has been observed (Givner et al., 1981).

There is a decrease in the quality of life due to the morbidity of chronic osteomyelitis in association with varied effects of hemoglobinopathy. In addition, there are many factors that lead to a high frequency of infection in these patients. Hyposplenism is an important factor that follows infarction, which mainly occurs during childhood, and subsequent fibrosis (Almeida and Roberts, 2005). Medullary bone infarction and necrosis creates an apt condition for bacterial growth and spreading. Furthermore, frequent hospital stays might lead to increased exposure of the patients to certain pathogenic bacteria strains (Resnick, 2002).

Osteomyelitis is commonly seen infection affecting the tibia, diaphysis of femur and humerus, along with the infection of the vertebras. The infection is hematogenous in nature due to its delayed onset. The most common casual organism is Salmonella (especially Salmonella enteritidis, Salmonella typhimurium, Salmonella paratyphi B, Salmonella choleraesuis and Salmonella aureus) followed by Staphylococcus aureus, which is seen in 10% of patients suffering from sickle cell-related osteomyelitis. Certain other causative bacterial species are Enterobacter spp., Haemophilus influenza, and Escherichia coli (Burnett et al., 1998).

Conclusion:-

Oteomyelitis manifests in patients with sickle cell anaemia when there is infections thorough some bacteria and could affect the bones with attendants effect in the activity of bone marrow which will affect the solid phase of blood and the quality of lives of the sickle cell anaemia patients. Preventive measures such personal hygiene should be adopted to avoid the danger such inflammation could cause in the patients.

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