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SICKLE CELL ANAEMIA: CURRENT BURDEN IN AFRICA

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Abstract

Sickle cell anaemia is single point mutation in position 6 of globin chain by valine replacing glutamic acid resulting to sickling and polymerization of red blood cells. This affects the supply of oxygen and vaso-occulisve crisis may set causing many systemic damages and creates great burden to the parents and the entire society.The burden of sickle cell anaemia is still high in Africa not minding the level of awareness in the society. The selective protective advantage of protection of sickle cell trait due the endemicity of malaria may be a major factor on the burden level in Africa as well as some culture. More sickle cell education should be given in public places and included in the curriculum of different levels of education for prevention.

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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 cellanaemia, which ends up from homozygous inheritance of sickle haemoglobin from each parents, is the maximum not unusualplace 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 haemolyticanaemia manifests as recurrent vaso-occlusion and organ harm that collectively motive 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 cellanaemia.

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).

Sickle Cell Anaemia

Sickle cell anaemia is an inherited blood disorder which is caused by production of an abnormal haemoglobin which binds to another abnormal haemoglobin within the red blood cells leaving the red blood cells stiff and sickle-shaped instead of the normal flexible biconcave shape (Lonerganet al., 2001). The abnormal sickle-shaped haemoglobins (Hb S) aggregate within the affected red blood cells and form elongated chains resulting in the sickle shapes of the affected red blood cells(Bookchin and Lew, 1996). These sickle-shaped cells become stuck to the endothelium of small blood vessels resulting in inadequate blood flow and supply to tissues. Persistent reduced blood flow through blood vessels could result in a cut-off in blood supply with accompanying necrosis of tissues (Lonerganet al., 2001). Sickle cell anaemia could reduce the life span of its patients as well as cause symptoms including shortness of breath,severe pain in the chest,back,abdomen or extremeties.Nonetheless,some treatments are available to improve the quality of lifeincluding medications, blood transfusions and bone marrow transplants (Steinberg, 1999).

Global prevalence of sickle cell anaemia

Each year, more than 300,000 infants are born with severe hemoglobin abnormalities (WHO, 2022). Inherent haemoglobin abnormalities, primarily sickle-cell disease and thalassemia, affect about 5% of the global population.Because mutant haemoglobin genes are inherited from both parents, who are typically healthy, hemoglobin abnormalities are hereditary blood illnesses (WHO , 2022). Millions of people around the world suffer from sickle cell disease (SCD), which is more prevalent among those whose ancestors originated in sub-Saharan Africa, Saudi Arabia, India, and Mediterranean nations like Turkey, Greece, and Italy. It is also more prevalent in Spanish-speaking areas of the Western Hemisphere (South America, the Caribbean, and Central America) It is also estimated that sickle cell anaemia occurs among about 1 out of every 365 Black or African-American births and 1 out of every 16,300 Hispanic-American births.About 1 in 13 Black or African-American babies is born with sickle cell trait (SCT) (CDC, 2019).

Burden of sickle cell anemia in Africa

It has been estimated that 50–90% of all sickle cell anemia cases occur in Africa, with sub-Saharan Africa having the highest prevalence. In some countries in sub-Saharan Africa, up to 2-3% of newborns may have sickle cell anemia, with many more carrying the sickle cell trait (WHO, 2022).Environmental variables often play a role in the occurrence of painful attacks. Cold weather, dehydration, strenuous activity, and tobacco smoke are typical triggers. An attack can also be triggered by additional factors, such as flying and being at a high altitude.Most children with the most severe type of the disease in the tropics pass away before turning 5 years old, typically from an infection or severe blood loss. The prevalence ranges from 20% to 30% in nations like Cameroon, the Republic of the Congo, Gabon, Ghana, and Nigeria, while it can reach 45% in some areas of Uganda (CDC, 2019).

Conclusion:-

The burden of sickle cell anaemia is still high in Africa not minding the level of awareness in the society. The selective protective advantage of protection of sickle cell trait due the endemicity of malaria may be a major factor on the burden level in Africa as well as some culture. More sickle cell education should be given in public places and included in the curriculum of different levels of education for prevention.

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