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The Iron Status of Children with and without Sickle Cell Disease at the University of Ilorin Teaching Hospital, Nigeria

L'état du fer chez les enfants avec et sans la maladie de la drépanocytose à l'Hôpital universitaire d'Ilorin, Nigéria

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ABSTRACT

BACKGROUND: Children with sickle cell disease (SCD) are at potential risk of iron overload from chronic transfusion and probable iron deficiency due to accelerated growth. However, only few studies on the iron status of children with SCD in Nigeria are available.

METHODOLOGY: A cross-sectional study compared the iron status of 109 children with sickle cell disease with 109 age- and sex-matched haemoglobin AA controls at the University of Ilorin Teaching Hospital. Parameters assayed were serum iron, ferritin, transferrin, and haemoglobin (Hb) concentrations. Considering the appropriate reference values for age and sex, these parameters were used to classify the children into high, normal or low iron status.

RESULTS: The median (interquartile range) serum ferritin level of 180.00 (237.50)ng/ml for the SCD subjects was significantly higher than 70.00 (120.00)ng/ml observed among controls, but the mean Hb and median serum transferrin levels were significantly lower in the subjects compared with the corresponding values in the controls, each showing statistical significance ($p < 0.05$). The median serum iron levels did not differ significantly between the SCD (112µg/dl) and non-SCD (128µg/dl), $p=0.309$.

A high proportion of subjects had low HB status (96.3%) compared with controls (56.9%), $p=0.001$. A significantly higher proportion of subjects (78%) had high ferritin status compared with the controls (48.3%; $p < 0.001$). Ten (9.1%) SCD children had low serum iron status compared to 28 (25.7%) HbAA controls, $p=0.002$. Thirty-four (31.2%) subjects had low transferrin status which was significantly higher than the corresponding number of controls (8; 7.3%; $p < 0.001$).

CONCLUSION: The children with SCD in the index study were iron sufficient. **WAJM 2023; 40(10); 1013 -1020.**

Keywords: sickle cell disease; iron status; serum ferritin; children.

RÉSUMÉ

CONTEXTE : Les enfants atteints de la drépanocytose (SCD) sont potentiellement exposés à un excès de fer dû aux transfusions chroniques et à une éventuelle carence en fer due à la croissance accélérée. Cependant, seulement quelques études sur l'état du fer chez les enfants atteints de la SCD au Nigéria sont disponibles.

MÉTHODE: Une étude transversale a comparé l'état du fer de 109 enfants atteints de la drépanocytose à celui de 109 témoins de même âge et de même sexe porteurs d'hémoglobine AA à l'hôpital universitaire d'Ilorin. Les paramètres analysés étaient les concentrations de fer sérique, de ferritine, de transferrine et d'hémoglobine (Hb). En utilisant les valeurs de référence appropriées pour l'âge et le sexe, ces paramètres ont été utilisés pour classer les enfants en fonction de leur statut en fer, à savoir élevé, normal ou faible.

RÉSULTATS: Le niveau médian (plage interquartile) de ferritine sérique de 180,00 (237,50) ng/ml chez les sujets atteints de SCD était significativement plus élevé que les 70,00 (120,00) ng/ml observés chez les témoins, mais la concentration moyenne en Hb et le niveau médian de transferrine sérique étaient significativement plus bas chez les sujets par rapport aux valeurs correspondantes chez les témoins, chaque différence étant statistiquement significative ($p < 0,05$). Les niveaux médians de fer sérique ne différaient pas de manière significative entre les sujets atteints de SCD (112 µg/dl) et les témoins non atteints de SCD (128 µg/dl), $p=0,309$. Une proportion élevée de sujets présentait un faible statut en Hb (96,3 %) par rapport aux témoins (56,9 %), $p=0,001$. Une proportion significativement plus élevée de sujets (78 %) avait un statut élevé en ferritine par rapport aux témoins (48,3 % ; $p < 0,001$). Dix (9,1 %) enfants atteints de SCD avaient un faible statut en fer sérique par rapport à 28 (25,7 %) témoins HbAA, $p=0,002$. Trente-quatre (31,2 %) des sujets avaient un faible statut en transferrine, ce qui était significativement plus élevé que le nombre correspondant de témoins (8 ; 7,3 % ; $p < 0,001$).

CONCLUSION: Les enfants atteints de la SCD dans cette étude étaient suffisamment approvisionnés en fer. **WAJM 2023; 40(10); 1013 -1020.**

Mots-clés: maladie de la drépanocytose ; statut en fer ; ferritine sérique ; enfants

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