

الآلية

قال تعالى:

{اللَّهُ نُورُ السَّمَاوَاتِ وَالْأَرْضِ مَثَلُ نُورِهِ كَمِشْكَانٍ فِيهَا
مِصْبَاحٌ الْمِصْبَاحُ فِي رُجَاجَةِ الرُّجَاجَةِ كَانَهَا كَوْكِبٌ دُرِّيٌّ
يُوقَدُ مِنْ شَجَرَةِ مُبَارَكَةِ رَبِّيْتَةِ لَا شَرْقِيَّةٍ وَلَا غَرْبِيَّةٍ يَكَادُ
رَبِّيْتَهَا يُضِيِّعُ وَلَوْ لَمْ تَمْسَسْنِيهِ نَارٌ نُورٌ عَلَى نُورٍ يَهْدِي اللَّهُ
لِنُورِهِ مَنْ يَشَاءُ وَيَصْرِبُ اللَّهُ الْأَمْتَالَ لِلنَّاسِ وَاللَّهُ بِكُلِّ
شَيْءٍ عَلِيمٌ}

سورة النور الآية (35).

صدق الله العظيم

الإهداء

أهدى هذا الجهد المتواضع الي ...

أسرتي .. أمي .. أبي .. وأخوتي ...

أسرتي الصغيرة ... زوجي وأبنائي ...

أصدقائي .. زملائي.. وأساتذتي في كل مراحل
الدراسة ...

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Abbreviations

CBC	Complete Blood Count
Cumm	Cubic millimetre
DW	Distilled Water
EDTA	Ethylene Diamine Tetra- Acetic acid
FL	Femto litter
Hb	Haemoglobin
ID	Iron Deficiency
IDA	Iron Deficiency Anaemia
LDH	<u>lactic acid dehydrogenase</u>
MCH	Mean Cell Haemoglobin
MCHC	Mean Cell Haemoglobin Concentration
MCV	Mean Cell Volume
Nm	Nano meter
PBP	Peripheral Blood Picture
Pg	Pico gram
RBCs	Red Blood Cells count
SUST	Sudan University of Science and Technology
TIBC	Total Iron Binding Capacity
TWBCs	Total White Blood Cells counts
WHO	World Health Organization

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Abstract

This is a descriptive and cross-sectional study which was conducted to detect the frequency of nutritional anemia in primary school children in Kosti city, locality of Kosti, White Nile state, in period between July to November 2009.

The study included 300 volunteer pupils from some schools of Kosti city, 204 were males (68%), and 96 (32%) were females, with a range of age between 6 to 14 years.

Two and half ml of blood were collected from each pupils in EDTA container, this is for CBC using Sysmex (automated blood Analyzer). Another (amount 2.5 ml) of blood were collected again from each pupil in plain container, from these sera were separated by centrifugation, and then analyzed for serum iron and serum firritin using of Biosystem A25.

Blood films were prepared from the first samples and studied for RBCs morphology. The results were as follows:

The mean Hb conc.12.2 g/dl ($\pm 2SD$), mean PCV 37.2%,mean MCV 79.5 fl($\pm 3SD$), mean MCH 26.2pg, mean MCHC 32.8 g/dl, mean RBCs count4.7million c/cumm, mean WBCs count 6557c/cumm($\pm 3SD$), mean platelets count 284 c/cumm($\pm 2SD$), mean serum iron 44.6 micro g/l and mean serum ferittin 50.5 micro g/l.

Out of 300 samples 15 samples were showed the Hb conc. (mean 9.1g/dl ($\pm 2SD$)), (5%) of samples, ie, anemic, with consequent reduced in mean PCV (31%) , mean MCV (68.7fl ($\pm 3SD$)), mean MCH (20.2 pg), mean MCHC (29.2g/dl), mean RBCs count 3.8 million c/cumm, mean TWBCs(7500 c/cumm($\pm 3SD$)) ,mean platelets count (246c/cumm($\pm 2SD$)) ,mean serum iron 40microg/l and mean serum ferritin 45microg/l.

Microcytic hypochromic RBCs were found in 27 samples (9.1%) and normocytic normochromic RBCs were found in 271 samples (90.9%).

Serum iron was less than 50 micro g /l (the lower limit of the normal range) in 19 samples (6.4 %) and the serum firritin, was less than 20 micro g /l (the lower limit of the normal range) in 12 samples (4.02%).

The frequency of iron deficiency anemia was 5% in pupils of these primary school of Kosti city, and megaloblastic anemia was not detected morphologically in all samples.

The mean MCV in anemic patient was 68.7 fl ($\pm 3SD$) in 300 samples was 79.5($\pm 3SD$) fl ,while in the iron deficient sample was 68.7fl ($\pm 3SD$), ie the same as that in anemic patient .

All the pupils, whom had Hb conc less than 10.5 g/dl, had a family member more than five. In this study sex had no any effect on the Hb concentration.

The mean TWBCs was normal in all subjects

أجريت هذه الدراسة الوصفية المقطعية للكشف عن مدى إنتشار فقر الدم الناتج عن سوء التغذية بين طلاب مدارس مرحلة الأساس بمدينة كوستي بولاية النيل الأبيض في الفترة ما بين يونيو وحتى نوفمبر 2009، تم جمع 300 عينة دم وريدي من الطلاب المتطوعين وقد كانوا 238 طالب ويمثلون 68%， بينما طلابات كن 112 طالبة ويمثلن 32%. تمأخذ 2.5 مل من كل متطوع وتم وضعها في حاويات تحتوي على مواد مانعة للتجلط (EDTA) وذلك لفحص الصوره الشاملة للدم بإستخدام جهاز (Sysmex). إضافة إلى 2.5 مل أخرى من الدم وتم وضعها في حاويات لا تحتوي على مانع التجلط وذلك لقياس مستوى الحديد في الدم بإستخدام جهاز (Biosystem A25)، ومن ثم تم صنع أفلام رقيقة وصبغها لرؤيدة شكل الخلايا الحمراء. وقد أظهرت إختبارات حساب مكونات الدم أن متوسط قياس عاملات الخلايا الحمراء للاختبارات كما يلى. كان متوسط خضاب الدم 12.2 ج/100 مل، بينما كان متوسط حجم الخلايا المتراصة 37.2% وكان متوسط عدد كريات الدم الحمراء 4071949 خلية/ المللتر المكعب وكان متوسط حجم الخلايا الحمراء 79.5 فل، ومتوسط خضاب الدم في الخلايا الحمراء 26.2 بـ غ، بينما كان متوسط تركيز خضاب الدم في كرة الدم الحمراء هو 32%， متوسط الخلايا البيضاء 6557 خلية/ المللتر المكعب ومتوسط الصفائح الدموية 284 خلية/ المللتر المكعب وكان متوسط نسبة الحديد 44.6 مايكرو غرام /ليتر ومتوسط الفرتين 50.5 مايكرو غرام / ليتر. من مجموع 300 عينة كانت هناك 15 عينة تتميز بنسبة خضاب الدم الأقل من التركيز 10.5 جرام/100 مل كحد أدنى للمادي الطبيعي وتمثل نسبة 5%. هذا يعني ان عدد المصابين بقص الحديد عبارة عن 15 فرد. كما أن هناك 16 عينة تمتاز بنسبة الخلايا المتراصة الأقل من 31.5 وتمثل 5.4%. وكانت نسبة متوسط حجم الخلايا الحمراء الأقل من 78 فل في 86 عينة وتمثل 28.9%. ونسبة متوسط خضاب الدم في الخلية الحمراء الأقل من 26 بـ غ كان في 98 عينة ويمثل 32.9%. أما نسبة متوسط تركيز خضاب الدم في الخلية الحمراء الأقل من 33 غ/100 مل كان في 109 عينة ويمثل 36.6%. كما أظهرت نتائج الأفلام الرقيقة للدم أن نسبة الخلايا الحمراء التي تمتاز بالحجم الصغير ومستوي الخضاب المنخفض كانت في 27 عينة وتمثل 9.1%. وكانت نسبة شكل الخلايا الطبيعية ذات الخضاب الطبيعي في 271 عينة وتمثل 90.9%. نسبة تركيز الحديد الأقل من 50 كانت في 19 عينة وتمثل 6.4%.

وقد أثبتت الدراسة إنتشار انيميا بقص الحديد بنسبة 5%. بينما أثبتت عدم وجود فقر الدم الضخم الأروماتي.

كذلك كل الطلاب الذين لديهم تركيز خصاب الدم أقل من 10.5 g/dl كان عدد أفراد أسرهم أكثر من خمسة أفراد، كما توصلت الدراسة أنه ليس هناك تأثير واضح لذوع الجنس على تركيز خصاب الدم.