بسم الله الرحمن الرحيم

قال تعالى:

(رب أوزعني أن أشكر نعمتكم التي أعفتم علي وعلى والدي وأن أعمل صالحًا ترضاه وأصلح لي في دريتي إنه ثبت إليك واني من المسلمين)

صدق الله العظيم

سورة الأحقاف

الآية 15
Dedication

To my father:
    Your presence illuminates our path in life.

To my mother:
    Your love gives me the courage and the determination.

To my husband:
    You are the source of my strength and backup.

To my kids, sisters and brother:
    I learned how to love through you.

To my colleagues:
    You are beyond a class mate, you are my friends/sisters.

To everyone who helped me:
    Thank you.

    Roa…
Praise for God who helped me and facilitated accomplishing this research.
It is a pleasure to direct my deep gratitude and appreciation to Dr. Kawthar Abdalgaleil who provided professional guidance, direction and supervision.
My sincere thanks and gratefulness are announced to Dr. Sara Alamin Alhaj and Dr. Wisam Omer Taha for the encouragement and support.
I recognize and acknowledge all efforts exerted by my lecturers in the college, nurses and staff of Ahmed Gasim hospital and Aljaili Khaled Musa laboratory.
Finally great full thanks extended to all patients with chronic kidney disease whom the blood samples has been collected from.
Abstract

Anemia is a common in patients with chronic renal failure specially in patients requiring hemodialysis. An important factor in successful treatment of anemia by giving erythropoietin stimulating agent combined with supplementary iron. So, iron status must be monitored regularly to ensure maintenance of adequate iron supplements without adverse effect of excess iron.

This study aimed to evaluate body iron status in Sudanese patients with end stage chronic renal failure treated with regular hemodialysis, recombinant erythropoietin and iron supplement, and correlate iron profile with age, gender and duration of hemodialysis.

Eighty patients were included in this study from two dialysis centers in Khartoum states (Ahmed Gasim and Asbab hospitals). Data collected using structured interview questionnaire. Hematological parameters were measured using automated haematology analyzer (sysmex). Serum iron, total iron binding capacity (TIBC), and Serum ferritin measured using Bio system 350 semi automated spectrophotometer, and transferrin saturation percentage was calculated using the results of serum iron and total iron binding capacity. Data analyzed using statistical package for social sciences (SPSS).

Seventy five out of eighty patients (93.7%) were received regular intravenous iron dextran with EPO, and 5 patients (6.3%) were received oral iron.

Sixty five patients out of eighty (81.2%) were found to have anemia with Hb concentration <11 g\dl, the mean was 9.69±1.72. While high S.ferritin level with more than 800 µg\l were found in 71.2% of patients (57\80), of them the TSAT was > 50% in 27 patients (33.8%). Increase S.ferritin was statistically significant with duration of dialysis and with increase
intravenous iron doses, result values were 0.017 and 0.040 respectively. There were no influence of patients age or gender on iron profile. In conclusion, patients with HDCKD who were treated with intravenous iron are prone to iron over load.
مستخلص البحث

فقر الدم شائع عند المرضى الذين يعانون من الفشل الكلوي المزمن وخاصة في المرضى الذين يحتاجون إلى الاستصفاء الدموي. يعتبر إعطاء الأرثروبويتين بالإضافة إلى الحديد التكميلي عامل مهم في نجاح علاج فقر الدم. لذلك يجب رصد حالة الحديد بانتظام لضمان الحفاظ على كمية كافية من الحديد دون التأثير سلبا بسبب زيادة.

تهدف هذه الدراسة إلى تقييم حالة الحديد لدى المرضى السودانيين الذين يعانون من الفشل الكلوي المزمن في المرحلة النهائية والذين يعالجون بالاستصفاء الدموي الأرثروبويتين والمكمل الحديدي. ثم ربط نتائج الملف الحديدي مع عمر ونوع المريض ومدة الاستصفاء الدموي.

تم تضمين ثمانون مريضا في هذه الدراسة من مركزين لغسيل الكلى في ولاية الخرطوم (مستشفى أحمد قاسم ومستشفى أساب). تم جمع البيانات عن طريق الاستبيان. تم قياس معدلات الدم باستخدام محلل الدم الآلي (سيسمكس). وقد تم قياس الحديد المصل والقدرة الكلية على ربط الحديد وفرتين المصل باستخدام جهاز (بيوساستم 350) شبه الالي الطيفي. ثم حسب نسبة تشبع ترانسفيرين باستخدام نتائج الحديد المصل والقدرة على ربط الحديد الكلي. تم تحليل البيانات باستخدام الحزمة الإحصائية للعلوم الاجتماعية.

تم العثور على خمس وستون مريض من مجموع 80 (93.3%) ديكستران الحديد عن طريق الوريد بصورة منتظمة مع الأرثروبويتين. وخمس مرضى فقط (6.3%) كانوا يتلقون الحديد عن طريق الفم.

تم العثور على خمس وستون مريض من مجموع ثمانون (81.2%) يعانون من فقر الدم حيث كان تركيز الهيموجلوبين أقل من 11 جرام/دبليتر. حيث كان المتوسط 9.69 ± 1.72.

في حين تم العثور على ارتفاع مستوى فرتين المصل أكثر من 800 ميكروجرام/لتر في 71.2% من المرضى (57.0% من المرضى), ومنهم كانت نسبة تشبع الحديد مرتفعه أكثر من (50%) في 27 مريض (%33.8).

زيادة نسبة الفرتين المصل كانت ذات دلاله إحصائية مع مدة الاستصفاء الدموي (ومع زيادة جرعة الحديد عن طريق الوريد وكانت قيم النتائج (0.040 و 0.07) على التوالي.

لم يكن هناك تأثير لعمر أو نوع المريض على نتائج الحديد.

نستنتج أن المرضى الذين يعانون من الفشل الكلوي المزمن تحت الاستصفاء الدموي والذين يعالجون بالدود بين طريقي الوريد عرضة لزيادة نسبة الحديد.
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<td>ACD</td>
<td>Anemia of chronic disease</td>
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<tr>
<td>AOI</td>
<td>Anemia of inflammation</td>
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<tr>
<td>ARF</td>
<td>Acute renal failure</td>
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<tr>
<td>BFU-E</td>
<td>Burst forming unit- erythrocyte</td>
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<td>CBC</td>
<td>Complete blood count</td>
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<td>CKD</td>
<td>Chronic kidney disease</td>
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<tr>
<td>CFU-E</td>
<td>Colony forming unit- erythrocyte</td>
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<tr>
<td>CRF</td>
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<tr>
<td>DMT</td>
<td>Divalent metal transport</td>
</tr>
<tr>
<td>DPG</td>
<td>Di phosphor gluconate</td>
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<tr>
<td>DW</td>
<td>Distilled water</td>
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<tr>
<td>EPO</td>
<td>Erythropoietin</td>
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<tr>
<td>ERBP</td>
<td>European Renal Best Practice</td>
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<tr>
<td>ESA</td>
<td>Erythropoietin stimulating agent</td>
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<tr>
<td>ESRF</td>
<td>End-stage renal failure</td>
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<tr>
<td>Fe&lt;sup&gt;++&lt;/sup&gt;</td>
<td>Ferrous iron</td>
</tr>
<tr>
<td>Fe&lt;sup&gt;3+&lt;/sup&gt;</td>
<td>Ferric iron</td>
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<tr>
<td>GFR</td>
<td>Glomerular filtration rate</td>
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<td>Hb</td>
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<td>HCP</td>
<td>Hem carrier protein</td>
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<td>Hemodialysis</td>
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<td>HDCKD</td>
<td>Heodialysis chronic kidney disease</td>
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<tr>
<td>HIV</td>
<td>Human immunodeficiency virus</td>
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<tr>
<td>IDA</td>
<td>Iron deficiency anemia</td>
</tr>
<tr>
<td>IL</td>
<td>Inter leukin</td>
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<tr>
<td>IRE</td>
<td>Iron response element</td>
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<tr>
<td>KDIGO</td>
<td>Kidney Disease Improving Global Outcomes</td>
</tr>
<tr>
<td>LMW</td>
<td>low molecular weight</td>
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<tr>
<td>MCH</td>
<td>Mean cell hemoglobin</td>
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<td>MCHC</td>
<td>Mean cell hemoglobin concentration</td>
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<td>Mean cell volume</td>
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<tr>
<td>ml</td>
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<tr>
<td>NCC-CC</td>
<td>National collaborating center for chronic condition</td>
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<tr>
<td>ng/ml</td>
<td>Nanograms per milliliter</td>
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<tr>
<td>NICE</td>
<td>National and institute for health and care excellence</td>
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<tr>
<td>NKF-K/DOQI</td>
<td>National Kidney Foundation-Kidney Disease Outcomes Quality Initiative</td>
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<td>NHANES III</td>
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<td>RBCs</td>
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<tr>
<td>rHuoEPO</td>
<td>Recombinant Human Erythropoetin</td>
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<td>ROS</td>
<td>Reactive oxygen species</td>
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<tr>
<td>R.P.M</td>
<td>Round per minute</td>
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<td>SD</td>
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<td>TIBC</td>
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<td>Table 3.3</td>
<td>Iron doses/month among patients</td>
<td>46</td>
</tr>
</tbody>
</table>