To evaluate the efficacy of qurs kushta faulad and sharbat-e-anar shirin in the management of iron deficiency anemia (Soo-Ul-Qiniya)

Shaikh Saleem Ahmed and Khan Nazia Zubair

Abstract

**Background and objectives:** It is a condition in which “a blood hemoglobin concentration lower than the defined normal level and, and is usually associated with decrease in circulating mass of red blood cells. This may result from decreased generation of red blood cells, or from their premature destruction, or from loss through chronic blood loss or hemorrhage. The commonest nutritional deficiency disorder present throughout the world is iron deficiency but its prevalence is higher in the developing countries. The objective of the study was to evaluate the efficacy of Qurs Kushta Faulad and Sharbate-Anar shirin in the management of Iron Deficiency Anemia (Soo-ul-Qiniya).

**Methods:** An open label randomized clinical study was conducted on patients (n=60) who attended the outdoor and indoor sections of Institute’s hospital. The duration of study was 90days with follow up at monthly interval for clinical features and investigations.

**Result:** Both drugs have provided statically improvement in iron deficiency anemia with p value <0.001 that is highly significant.

**Keywords:** Iron deficiency anemia, hemoglobin, kushta faulad, soo-ul-qiniya

**Introduction**

A disease iron deficiency anemia was first recognized in medieval times as “Chlorosis”, a termed derived from the Greek word meaning green, in 1554 AD by Johannes Lange who called it “Disease Of Virgins”, and the disease became well known not only in medical circles but also in general population who called it the “Green sickness” a condition often resulting from Iron deficiency [1].

The empirical use of iron in treatment of anemia dates from ancient times. It has been used by Egyptians, Greeks, Romans and Hindus in early times. But treatment with iron was remained controversial until the 1932 when role of iron was finally understood by convincing proof that inorganic iron was required for hemoglobin synthesis [2]. It is a condition in which “a blood hemoglobin concentration lower than the defined normal level and, and is usually associated with decrease in circulating mass of red blood cells. This may result from decreased generation of red blood cells, or from their premature destruction, or from loss through chronic blood loss or haemorrhage [3]. The World Health Organization (WHO) defines anemia as hemoglobin level <130g/L (13g/dL) in men and <120g/dL (12g/dL) in women [4]. The commonest nutritional deficiency disorder present throughout the world is iron deficiency but its prevalence is higher in the developing countries [5]. Around 30% of the total world population is anemic and half of these around 600 million people have iron deficiency [6]. Survey report from the NFHS (National Family Health Survey), in India, shows that during the period 1998-2016, over 50% of women aged 15-49 years had Iron Deficiency Anemia, also recent published study on the Burden of disease in India indicate that the burden of Iron deficiency anemia is 3.0 times higher than the average globally for other geographies at a similar level of development [7].

Iron is critical to formation of hemoglobin in red blood cells iron deficiency and its adverse health consequences result from inadequate iron intake, decreased absorption or transport, or chronic blood loss increased systemic demands for iron to meet the relatively high iron requirements of young children and reproductive aged women [8,9].

In Unani literature this condition termed as Soo-ul-Qiniya, Faqruddam ba sabab-e-Qillat-e- Faulad, Khoon ki Tabahi, Khoon ki Mohataji, etc. by the various Unani physicians. Soo-Ul-Qiniya is a combination of two words “Soo” and “Qiniya” which means alteration in the reservoir of blood, and Qiniya means Poonji (Treasure), also called Raas-Ul-Maal” and liver the reservoir of blood is termed as Poonji” [11,12].

---

Corresponding Author:
Shaikh Saleem Ahmed
Associate Professor,
Department Mahiyatul Amraz (Pathology), Hayat Unani Medical College, Lucknow, Uttar Pradesh, India
Also most of Unani physicians and scholars have described Soo-ul-Qiniya (Iron deficiency anemia) under different headings like Ezhebais-e- Tams, Zafr-e-Talqiyah, Soo-e-Mijaz Barid of liver and Bawsiir-e-Damvi which are very similar to Soo-ul-Qiniya [13].

Avicenna (Ibn-e-Sina 980-1037AD) explained in his famous book Al-Qanoon Fit-Tib (Cannon of Medicine), that “anemia occurs due to cold temperament of liver with clinical features of pallor, papilla edema, and edema in extremities, he also described dyspnoea, amenorrhea, weakness and fatigue as some important features of Soo-Ul-Qiniya which are the result of defect in Muaylid-e-Khoon (haemopoiesis) caused by hepatic coldness due to sue Mijaz-e-Jigar which down regulates the haemopoiesis, simultaneously zof-e-kulliya exist, altering filtration as result Istisqaa (edema) sets in [15].

The control of Iron deficiency anemia requires multiple strategies such as increasing the level of intake through diet, improving the bioavailability of the dietary iron, control of parasitic infestation or infection, and supplementation with medicinal iron16. A large number of patient especially females, attending the hospital are observed to be anemic. Keeping all these factors in view the highly claimed drugs Qurs Kushtha-e-Faulad as a good iron supplement and Sharbat-e-Anar Shirin which is not only a good liver tonic but also increases iron absorption in the body have been selected for the study. Although there are so many Unani drugs with iron as ingredient, yet only few has documented evidence of their efficacy.

Materials and Methods

Study Design

An open label randomized clinical study was conducted on patients who attended the outdoor and indoor sections of Moalijat at Z.V.M Unani medical college, Pune. During the period of extending from 2010-2013:The duration of study was 90days with follow up at monthly interval for clinical features and investigations. Ethical clearance was obtained from ethical committee with reference no. MMERC/EC/ZVM dated 02/04/2011.

Participants: The present study was conducted on 60 adult patients suffering from Iron deficiency anemia. The patients belonging to either sex were selected randomly for study.

Patients’ Selection Criteria

Inclusion Criteria

Only those patients, who came with the complaints of fatigue, lassitude, palpitation, exertional dyspnea, faintness were taken into considerations and investigated to ascertain the diagnosis, with hemoglobin and Serum Iron below 10 gm%, 50µg/dl respectively. Only after the confirmation of diagnosis as Iron deficiency anemia, patients were selected for the study.

Exclusion Criteria

Patients suffering from active bleeding, chronic disease, any systemic disease (Diabetes Mellitus, Coronary Artery Diseases, Pulmonary Tuberculosis etc.) ; mentally impaired, and pregnant women were excluded from the study. The study was open and each patient acted as his/her own control. The patient selected for this study had either not taken any treatment at all or had let the treatment before a pretty long period and no concomitant treatment was allowed during the study for the same disease.

Laboratory Evaluation

Following investigations were carried out during the study, to ensure better diagnosis and assessment.

Routine Investigations

- Routine Haemogram

  Routine haemogram was done for Hemoglobin concentration (Normal value: male 16±2 gm/dl, female 13±2 gm/dl).

- Examination of Stool: Stool examination for ova and cysts was done as a routine test and occult blood as special test.

- Examination of Urine: Routine and Microscopic urine examination for the presence of albumin, sugar, pus cells and crystals was done before the commencement and then during the course of the study.

- Special Investigations: following hematological and biochemical tests of all the cases were carried out at the commencement of the study and at regular intervals to confirm the diagnosis, to assess the improvement and to vigil any adverse/unwanted effects of the drug given.
  - Packed Cell Volume (PCV); Normal value:41-45%
  - RBC Count Normal value: 5.5 million/dl(Male), 4.8 million/dl (Female)
  - GBP (size, color and shape of RBCs): Normal; Normocytosis, Normochronic, Normal in shape.
  - Mean Corpuscular Volume (MCV)
  - MCV = [PCV X 10]/[RBC Count (million/dl)]; Normal value: 90±8FL
  - Mean Corpuscular Haemoglobin (MCH)
  - MCH= [Haemoglobin (gm/dl) X10]/[RBC Count (million/dl)]; Normal value 30±3 pg
  - Mean Corpuscular Haemoglobin Concentration (MCHC)
  - MCHC=[MCH X 100/PCV]; Normal value 33±2%
  - Serum Iron (Ferrozin method); Normal range 50-150 µ/dL
  - Total Iron Binding Capacity (TIBC) Normal range Ferrozin method) 300-360µg/dL
  - LFT (Liver Function Test):
    - Serum Bilirubin (Modified method).
    - SGPT (Reitman and Frankel method).
    - SGPT (Reitman and Frankel method).
    - Serum Alkaline Phosphatase (Kind and Kings Method).
  - RFT (Renal Function Test):
    - Blood Urea estimation (DAM method).
    - Serum Creatinine estimation (Alkaline Picare method).

Availability of Drugs

Drugs Qurs Kushtha Faulad and Sharbat-e-Anar Shirin was purchased from medical store manufactured by, Hamdard (GMP certified), Delhi. All patients were received Qurs 1 tablet twice daily and Sharbat 25ml BD and advised to take regular drug in proper dosage and bring the remaining drugs in each follow up.
Statistical Evaluation
The data were collected as per case record form and transformed into an excel sheet, appropriate diagrammatic presentation of data in the form of bar diagram pie diagram and linear graphs were done to make data concise attractive and easy to interpret

Following formulas were used in the calculations:
- Calculation of the Mean:
  - Mean=$\frac{\sum x}{n}$
  - Where x is the variable
  - n is the number of cases
- Calculation of the Standard Deviation
  - $S = \sqrt{\frac{1}{n-1} \sum (x-x)^2}$
- Calculation of the ‘t’ Value
  - $t = \frac{d}{\sqrt{N/S}}$
  - Where d= Mean of difference before and after treatment
  - S= Standard Deviation of the difference
  - N= Number of cases
- Determination of ‘P’ value
  - The P value was determined from the statistical table and interpreted as following:
    - P<0.050= Significant
    - P<0.001=Highly Significant
    - P>0.050=Insignificant

Results

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Before (n=60)</th>
<th>After (n=60)</th>
<th>Improved Percentage</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Of Patients</td>
<td>Mean Severity Score</td>
<td>No. Of Patients</td>
<td>Mean Severity Score</td>
</tr>
<tr>
<td>Pallor on nails</td>
<td>60</td>
<td>1.5 + 0.54</td>
<td>38</td>
<td>0.6 + 0.30</td>
</tr>
<tr>
<td>Pallor on palp. conjunctiva</td>
<td>60</td>
<td>2 + 0.62</td>
<td>49</td>
<td>1 + 0.32</td>
</tr>
<tr>
<td>Oedema</td>
<td>21</td>
<td>0.3 + 0.48</td>
<td>6</td>
<td>0.1 + 0.30</td>
</tr>
<tr>
<td>Whitening of palm &amp; sole</td>
<td>60</td>
<td>1.5 + 0.49</td>
<td>44</td>
<td>0.7 + 0.44</td>
</tr>
<tr>
<td>Koilonychias</td>
<td>6</td>
<td>0.1 + 0.37</td>
<td>4</td>
<td>0.08 + 0.30</td>
</tr>
<tr>
<td>Britleness of nails</td>
<td>6</td>
<td>0.13 + 0.43</td>
<td>5</td>
<td>0.1 + 0.35</td>
</tr>
<tr>
<td>Stomatitis</td>
<td>25</td>
<td>0.5 + 0.72</td>
<td>1</td>
<td>0.01 + 0.12</td>
</tr>
<tr>
<td>Glossitis</td>
<td>19</td>
<td>0.3 + 0.54</td>
<td>2</td>
<td>0.03 + 0.1</td>
</tr>
<tr>
<td>Tachycardia</td>
<td>38</td>
<td>0.6 + 0.51</td>
<td>6</td>
<td>0.1 + 0.30</td>
</tr>
<tr>
<td>Systolic flow murmur</td>
<td>26</td>
<td>0.4 + 0.49</td>
<td>7</td>
<td>0.1 + 0.32</td>
</tr>
</tbody>
</table>

(The values are mean $\pm$ SD, P-values are obtained by paired "t" test, P-value less than 0.005 is considered to statistically significant.)

Graph 1: Showing effect of drugs on Signs

Table 2: Showing effect of drug on symptoms

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Before (n=60)</th>
<th>After (n=60)</th>
<th>Improved Percentage</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Of Patients</td>
<td>Mean Severity Score</td>
<td>No. Of Patients</td>
<td>Mean Severity Score</td>
</tr>
<tr>
<td>Fatigue</td>
<td>60</td>
<td>2.2 + 0.64</td>
<td>48</td>
<td>1 + 0.63</td>
</tr>
<tr>
<td>Headache</td>
<td>44</td>
<td>0.9 + 0.68</td>
<td>10</td>
<td>0.1 + 0.37</td>
</tr>
<tr>
<td>Ex. Dyspnoea</td>
<td>60</td>
<td>1.9 + 0.64</td>
<td>44</td>
<td>0.8 + 0.35</td>
</tr>
<tr>
<td>Gen.weakness</td>
<td>59</td>
<td>2.1 + 0.63</td>
<td>25</td>
<td>0.4 + 0.39</td>
</tr>
<tr>
<td>Lassitude</td>
<td>59</td>
<td>1.6 + 0.69</td>
<td>42</td>
<td>0.7 + 0.56</td>
</tr>
<tr>
<td>Faintness</td>
<td>54</td>
<td>1.1 + 0.58</td>
<td>23</td>
<td>0.3 + 0.49</td>
</tr>
<tr>
<td>Dizziness</td>
<td>48</td>
<td>0.9 + 0.37</td>
<td>13</td>
<td>0.2 + 0.41</td>
</tr>
<tr>
<td>Stomatitis</td>
<td>25</td>
<td>0.5 + 0.72</td>
<td>1</td>
<td>0.01 + 0.12</td>
</tr>
<tr>
<td>Palpitation</td>
<td>60</td>
<td>1.6 + 0.70</td>
<td>44</td>
<td>0.8 + 0.58</td>
</tr>
<tr>
<td>Amenorrhea</td>
<td>22</td>
<td>0.3 + 0.48</td>
<td>1</td>
<td>0.01 + 0.12</td>
</tr>
<tr>
<td>Swelling</td>
<td>21</td>
<td>0.3 + 0.48</td>
<td>6</td>
<td>0.1 + 0.30</td>
</tr>
<tr>
<td>Dysphagia</td>
<td>17</td>
<td>0.2 + 0.45</td>
<td>2</td>
<td>0.05 + 0.21</td>
</tr>
<tr>
<td>Hair fall</td>
<td>43</td>
<td>0.9 + 0.70</td>
<td>13</td>
<td>0.2 + 0.46</td>
</tr>
<tr>
<td>Abd. Pain</td>
<td>39</td>
<td>0.6 + 0.50</td>
<td>5</td>
<td>0.8 + 0.27</td>
</tr>
</tbody>
</table>

(The values are mean $\pm$ SD, P-values are obtained by paired "t" test, P-value less than 0.005 is considered to statistically significant.)
Graph 2: Showing effect of drugs on Symptoms.

Table 3: Showing effect of drug on Investigations.

<table>
<thead>
<tr>
<th>Laboratory Evaluation</th>
<th>Before</th>
<th>After</th>
<th>SE</th>
<th>t-VALUE</th>
<th>P-VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin Concentration (Gm %)</td>
<td>7.08 ± 1.01</td>
<td>8.73 ± 0.99</td>
<td>0.05</td>
<td>27.94</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Red blood cells (106/cumm)</td>
<td>3.17 ± 0.28</td>
<td>3.64 ± 0.33</td>
<td>0.02</td>
<td>19.74</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Packed cell Volume (%)</td>
<td>26.2 ± 3.62</td>
<td>30.75 ± 3.59</td>
<td>0.21</td>
<td>20.83</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mean Corpuscular Volume (femtoliter)</td>
<td>69.58 ± 5.17</td>
<td>74.18 ± 4.79</td>
<td>0.34</td>
<td>13.48</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mean Corpuscular Haemoglobin (µ/dl)</td>
<td>20.48 ± 2.06</td>
<td>23.26 ± 1.83</td>
<td>0.16</td>
<td>16.77</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mean Corpuscular Haemoglobin cn. (%)</td>
<td>24.93 ± 1.97</td>
<td>28.12 ± 1.69</td>
<td>0.16</td>
<td>19.65</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Serum iron (µ/dl)</td>
<td>65.48 ± 4.17</td>
<td>70.78 ± 3.83</td>
<td>0.32</td>
<td>16.56</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total iron (µg/dl)</td>
<td>485.5 ± 9.92</td>
<td>475.4 ± 8.35</td>
<td>0.02</td>
<td>0.67</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Binding capacity (%)</td>
<td>0.89 ± 0.18</td>
<td>0.87 ± 0.14</td>
<td>0.55</td>
<td>18.32</td>
<td>&gt;0.05</td>
</tr>
</tbody>
</table>

Discussion
From the above tabulated observation of effect of drug on symptoms. It is evident that these drugs have 96% effect on stomatitis, 95.40% effect on amenorrhea, 88.20% effect on dysphagia, followed by 87% effect on abdominal pain, 77% effect on headache, 71.40% effect on swelling, 69.70% effect on hair fall, and 57% effect on gen. weakness, and faintness respectively. Minimum effect was seen on fatigue (20%), followed by 26% effect in exertional dyspnoea and palpitation after 90days of treatment.

During the study all the patients were examined for the signs as noted in above table it was observed that pallor on conjunctiva (100%), pallor on nails (100%), whitening of palms and soles (97.5%), tachycardia (82.5%) and bald tongue (77.5%) were the most consistent signs. Whereas oedema, systolic flow murmur, swollen and inflamed gums, glossitis, brittleness of nails, koilonychias, were less frequent signs only observed in cases of severe anemia.

It was observed that the drug has maximum 96% effect on stomatitis, 89.40% effect on glossitis, 84.20% effect on tachycardia, improvement in oedema and systolic flow murmur, was observed as 71.40%, and 65.50%, respectively. Minimum effect of 16.60%, was observed in brittleness of nails, 18% effect on pallor of conjunctiva, 33.30% effect was seen on koilonychias, and 36.60% effect was found on pallor nails.

As it is shown the mean hemoglobin value before treatment was 7.08 ± 1.01(gm %), which improved to 8.73 ±0.99(gm %), after 90days of treatment. On applying “paired t test” it was found that t=27.94; p<0.001, hence the result was highly significant. The mean RBCs count before treatment was 3.17 ±0.28(million/cumm), which improved to 3.64 ±0.33(million/cumm) after 90days of treatment. It was found that t = 19.74; p<0.001. The mean PCV before treatment was 26.2 ± 3.62(%), which improved to 30.75 ±3.59(%), after 90days of treatment. It was found that t = 20.83, p < 0.001. The mean MCV before treatment was 65.48 ± 5.17(femolitre), after 90days of treatment. It was found that t = 13.48, p < 0.001. The mean MCH before treatment was 20.48 ± 2.06 (picogram), which improved to 23.26 ± 1.83 (picogram), after 90 days of treatment, with t= 16.77, p < 0.001. The mean MCHC before treatment was 24.93 ± 1.97 (%), which improved to 28.12±1.69(%), after 90days of treatment with t=19.65, p<0.001. The mean serum iron before treatment was 65.48±4.17 (µ/dl), which improved to 70.78+3.83(µ/dl), it was found that t = 16.56, p<0.001. The mean total iron binding capacity before treatment was 485.5 ± 9.92(µ/dl), which improved to 475.4 ±8.36(µ/dl), after 90days of treatment and t = 18.32, p<0.001 The mean serum creatinine level before treatment was 0.89 ±0.18 (mg/dl), which was found to be 0.87 ±0.14 (mg/dl), after 90days of treatment on applying “paired t test” it was found that t = 0.67, p>0.05, hence the drug has insignificant effect on serum creatinine level.

Since all the clinical features if iron deficiency anemia is either due to Iron deficiency anemia or due to deficiency of iron in the body tissues. After administrating the Kushta-e-Faulad, 1 tablet twice daily with Sharbat-e-Anar shirin, 25ml twice a day orally for duration of 90days. The blood production in the body is increased by Haemopoietic and Iron supplementation with Kushta Faulad. Whereas some drugs have styptic (haemostatic) as well as astringent...
effects, which stops further blood hence iron loss from body, and due to presence of vitamins and minerals as well as antioxidants in Sharbat-e-Anur Shirin, improves the general nutritional status and debility, at the same time presence of Vitamin C in the formulation act as adjuvant in iron absorption, ultimately increasing the quantity of blood in body.

Conclusion
Drug improves the clinical symptoms and signs as well as mild to moderate complications of iron deficiency anemia without any GI upset. Drug also improve the laboratory parameters (Hb%, PCV, RBC’s count, serum iron, TIBC etc.) as far as adverse effect is concerned during the course of treatment; no any adverse effect was observed or reported by the patients rather than there was improvement in liver metabolism. Due to presence of vitamins and minerals as well as antioxidants, the drug also improves the general nutritional status and debility.

Acknowledgement
The Authors are thankful to Institution’s Director, Principal, and attending patients for all their cooperation.

References
16. Jeffery L Miller, Iron Deficiency Anemia; A common and Curable Disease, Cold Spring Harbors Perspectives Medicine, 2013, 3(7).