Utility of Routine Stool Examination in Young Patients with Microcytic Hypochromic Anaemias

Muhammad Tariq Baqai *, Munazza Nazir **, Ameera Khurshid ***

*Department of Medicine, Muhyuddin International Medical College, Mirpur, Azad Kashmir; **Department of Medicine, Azad Jammu Kashmir Medical College, Muzaffarabad, Azad Kashmir; *** Department of Paediatrics, SKBZH/CMH Muzaffarabad

Abstract

Background: To study the utility of routine stool examination in patients with microcytic hypochromic anaemia in a semi-urban/rural setting

Methods: This prospective observational study was conducted at Sheikh Khalifa Bin Zaid (SKBZH) CMH Hospital in Muzaffarabad, Azad Jammu and Kashmir. Two hundred patients, 110 females and 90 males, between the age of 5 to 18 years with clinical features of anaemia were included in the study. They presented from Muzaffarabad and its adjoining areas in the Paediatric and Medical OPD of the hospital. Complete blood picture was done in all patients and routine stool examination was also advised

Results: Fifty-seven (28.4%) patients did not submit stool for examination. Thirty-two (15.9%) did not collect results from the laboratory. Stools for ova and parasite/cyst was reported in 14.3% (20) patients while they gave no such information in 45% (91)

Conclusion: Stool examination should be advised as an initial test for investigation of microcytic hypochromic anaemia as it has a significant yield in young patients in a rural setting. Where financial or other circumstances in the young do not permit this test or specific investigations for iron deficiency, a low haemoglobin coupled with low MCV, MCH and MCHC should be empirically treated with anti-helminths and iron supplements and the clinical response gauged.

Key Words: Microcytic Hypochromic Anaemia, Iron Deficiency Anaemia, Stool Examination

Introduction

Anaemia in general and iron deficiency anaemia in particular is a very common public health problem especially in developing countries. Iron deficiency is the most common nutritional deficiency worldwide. It leads to microcytic hypochromic anaemia. Consequences of iron deficiency particularly in the young population can lead to lifelong disabilities.
as soon as possible, preferably within two hours. Stool sample of admitted patients was sent immediately after collection to the laboratory. All patients with macrocytic or dimorphic picture, evidence of haemolysis, malignancy, pregnancy, acute illness in the previous fortnight, chronic illness, those receiving haematinics or anti helminthics or NSAIDs were excluded from the study. Serum iron or ferritin levels could not be carried out in all patients due to financial constraints. Stool examination was advised on all patients included in the study. Data was analysed in SPSS version 19.

Results

Out of 200 patients advised stool examination on first visit, 143 (71.5%) gave stool specimen for examination. Fifty seven (28.5%) did not take the trouble of collecting and submitting the specimen to the laboratory. Out of those who gave stool specimen 32 (22.37%) did not collect the report from the laboratory. In 20 (14.3%) stool examination showed presence of ova/cyst. In 91 (45%) of patients the stool report showed no relevant information pertaining to the clinical problem (Table 1). Average age of patients was 10.43 years for males who numbered 90 and 11.9 years for females who were 110. Haemoglobin levels ranged between 4.60 to 10.40 G/dL. Average for males being 8.4 G/dL and 7.9 G/dL for females. Surprising observation was that average weight for females was 35.0 kgm and males weighed less with average of 29 kgm. Reduction of MCV, MCH and MCHC was identical in both sexes (Table 2).

Table 1: Result of stool examination

<table>
<thead>
<tr>
<th>Sex distribution</th>
<th>Ova/cyst seen</th>
<th>Ova/cyst not seen</th>
<th>Report not collected</th>
<th>Specimen not analysed</th>
<th>Specimen not submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>8</td>
<td>25</td>
<td>17</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>54</td>
<td>15</td>
<td>1</td>
<td>29</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>89</td>
<td>32</td>
<td>3</td>
<td>57</td>
</tr>
</tbody>
</table>

Table 2: Characteristics of patients

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>90</td>
<td>110</td>
</tr>
<tr>
<td>Average age of patients (yrs)</td>
<td>10.43</td>
<td>11.09</td>
</tr>
<tr>
<td>Average Hb of patients G/dL</td>
<td>8.4</td>
<td>7.9</td>
</tr>
<tr>
<td>MCV</td>
<td>60</td>
<td>59</td>
</tr>
<tr>
<td>MCH(pg)</td>
<td>21.5</td>
<td>20.7</td>
</tr>
<tr>
<td>MCHC(G/dL)</td>
<td>24.6</td>
<td>24.1</td>
</tr>
</tbody>
</table>

Discussion

Anaemia and especially iron deficiency (IDA) is a common nutritional disorder affecting all ages and races. 

Consequences of IDA are growth retardation, impaired cognition and reduced performance with lifelong consequences. IDA has been well identified as the leading cause of nutrient deficiency that adversely affects national development. Complications in pregnancy result in mortality, morbidity and increased infant mortality rate. There can be no doubt regarding the magnitude of the problem.

Traditional approach in management of microcytic hypochromic anaemia/IDA is to establish the cause before initiating treatment. The investigations are complex, costly, cumbersome, time consuming and may be inconclusive. This strategy is well documented in adults as well as in elderly section of population as there may be serious underlying problems like malignancy or peptic ulcer disease. This approach may not be appropriate in our environment especially in those less than eighteen years of age. Stool routine examination is usually the first investigation requested in cases of microcytic hypochromic anemia. However this investigation is not feasible in all patients especially in those under eighteen years of age due to various reasons.

Stool examination provides useful clues to the diagnosis if it is performed on a fresh specimen. Hence it should reach the laboratory at the earliest and be processed and examined promptly. Most of the patients included in our study lived in far flung places from the hospital especially in the mountains. There is deplorable state of the roads and dearth of transport facilities. Duration between collection of stool specimen and it being received in the laboratory was between 3 to 5 hours. Unfortunately most hospital
laboratories including ours receive specimens from outside up to 10 am. Hence majority of specimens are not accepted by the laboratory.

Even in admitted patients there was a delay of two hours between collection of stool and it being examined in the laboratory. For those lucky patients who managed to deposit the specimen in time, unfortunately stool examination is not the top priority examination. There was a delay of one to two hours between receiving the specimen and its examination by the technician of questionable experience in examining stool specimens. In our study, out of the total number of stool examination requested, 57(28.4%) did not provide stool specimen for examination.

Laboratory analysis of the stool specimen is a time consuming effort. Typing and preparing the report takes further time. In our laboratory, it takes at least two hours to complete the processing, examination and preparation of the report. We came across several stool reports which we received long after the patient had left the hospital. The laboratory staff also informed that at least one third of the reports were not collected by the patient or his attendant.

Minimal cost of single report taking into account all the manual effort and time spent by different persons involved comes to at least Rs. two hundred. In our study 20(14.3%) patients showed evidence of parasitic infestations. Rest of the specimens yielded no significant diagnostic information. The association of parasitic infestations with microcytic hypochromic anemia anaemia related to helminthiasis is a major cause of IDA. In a study conducted in Abbottabad 230 children were found to have parasitic infestation amongst 283 subjects tested, suggesting a prevalence of 81% among the vulnerable group.17

In all cases of microcytic hypochromic anaemia with low MCV, MCH and MCHC in patients below eighteen years of age it is more pragmatic considering the scale of problem, its long-term consequences and lack of reliability of stool examination to regard it as iron deficiency anaemia such patients stool be treated with a single course of anti helmimths as well as iron supplements.18 19 Those patients who show no or poor response should be investigated.

Conclusion

Microcytic hypochromic anaemia/IDA is a major health problem in Pakistan. Routine stool examination has a significant yield, but not all patients agree to this test. It should be treated initially by antihelminths and iron supplements if other tests are not possible.

References

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