THE CAUSE OF THE SEXUAL DIFFERENCES IN ERYTHROCYTE, HEMOGLOBIN AND SERUM IRON LEVELS IN HUMAN ADULTS

By Bo Vahlquist, M.D.

IT IS KNOWN that men have higher mean values for erythrocytes, hemoglobin and serum iron than women. The cause of this phenomenon has been a matter of some dispute, several authors proposing that menstrual blood loss is sufficient to explain these differences, others maintaining that the sexual differences found in human beings may be hormonal in nature, like those observed not infrequently in animals.

In order to test the theory of an iron deficiency as the sole or the supplementary cause of the sexual differences of the blood values in human beings, the author has performed the following experiments: Erythrocyte counts, hemoglobin levels and serum iron levels were determined on a group of 22 normal female adults who had been given 300-336 mg. of ferrous iron daily for a period of eight weeks, and on a group of 20 women less than 45 years of age upon whom hysterectomy had been performed for benign surgical conditions (myomata, etc.) two or more years prior to this study. The results are given in table 1.

**DISCUSSION**

It is evident from the results given in table 1 that iron administration over a considerable time did not produce any significant rise in erythrocyte counts, hemoglobin values or serum iron values in these subjects. Likewise, no changes were

TABLE 1.—Results of Tests

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>After Hysterectomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erythrocyte counts, mill./cu.mm.</td>
<td>39 4.96 ± 0.06 40 4.53 ± 0.06</td>
<td>22 4.40 ± 0.07 20 4.71 ± 0.10</td>
<td></td>
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<tr>
<td>Hemoglobin values, Gm.%</td>
<td>40 15.41 ± 0.16</td>
<td>40 13.11 ± 0.17</td>
<td>22 12.85 ± 0.19 20 13.13 ± 0.15</td>
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<tr>
<td>Serum iron values gamma-%</td>
<td>160 108.8 ± 1.5* 160 109.9 ± 1.3*</td>
<td>24 116.7 ± 4.9† 20 115.8 ± 7.2</td>
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</tbody>
</table>

No. indicates number of subjects in the groups.
† Serum iron values after four weeks of iron treatment.

The table shows that neither intense iron treatment nor cessation of menstrual blood loss abolishes the sexual differences in erythrocyte counts, hemoglobin values and serum iron levels in human adults.
seen following hysterectomy with complete absence of menstrual blood loss. If we recognize further that one of the sexual differences which manifests itself at puberty is a gradual and marked rise in the blood values of boys (and not by a decrease in similar values of girls) it might be deemed as quite certain that sexual differences in blood values in human adults must have another etiology than blood loss due to menstruation. It is probable that they are of an endocrine nature.

REFERENCES

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