Inverted Neutrophile-Lymphocyte Ratios in Peripheral Blood Counts

To the Editor:

In 1917 Colyer remarked that 90 per cent of Northern Rhodesian Bantu had a lymphocyte count exceeding the neutrophil count in peripheral blood. Neutrophil-lymphocyte (N/L) ratios of 1:1.07 and 1:1.09 has been recorded in Africans studied at Kenya and Uganda. In 33 Caucasians studied in Kenya an inverted N/L ratio was found in 8 subjects only, while Booth and Hancock in England, in serial counts on 127 normal English males and females over a 2-year period found a reversal of the N/L ratio in 15 males and two females. This occurred in 35 counts out of a total of 1143 counts.

A role in the transport of melanin has been suggested for the lymphocyte and the consistently reported neutropenia and lymphocytosis in the blood of Africans has been re-investigated. A more detailed account and review of the literature on leucocyte counts in Africa will be published elsewhere.

Many Africans, otherwise normal, have a raised erythrocyte sedimentation rate (E.S.R.). Walker et al. showed that the raised E.S.R. returns to normal after provision of an adequate diet for 4-5 months and the E.S.R. has been suggested as a screening-test for occult malnutrition on this finding.

The 100 Caucasian, 103 Cape Colored and 94 Bantu males studied considered themselves normal and all of them had hemoglobin levels within normal limits (12-18 Gm. per cent) and no statistically significant difference in the mean hemoglobin levels was found between the groups. The total leucocyte counts were normal (means 7755, 7530, 7630 resp.) and not significantly different between groups.

The E.S.R. was less than 5 mm. Westergren in all Caucasians. It was above 5 mm. in 10 Cape Colored subjects, exceeding 10 mm. in 2 instances. In the Bantu group it was above 5 mm. in 40 individuals, exceeding 10 mm. in 17 instances.

An inverted N/L ratio was found in 46 Bantu (48.9 per cent), in 17 Cape Colored (16.5 per cent) and in 9 Caucasians (9 per cent).

Exclusion of all individuals with an E.S.R. above 10 mm., and above 5 mm. did not materially change the incidence of an inverted ratio in the remainder (table 1).

Eosinophilia is also of common occurrence among Africans, and though often ascribed to parasitism, parasites cannot be demonstrated in a large percentage of these cases. Exclusion of all individuals with eosinophil-counts in excess of 400 cells per mm. also did not change the incidence of an inverted ratio in the remainder (table 1).

The study was performed at Bellville at an altitude of less than 200 feet above sealevel. This area is free from malaria and the more exotic tropical diseases. Environmental factors, being approximately similar, do not appear to be of major importance.

Malnutrition, though possibly related to the inverted N/L ratio of monkeys, can be ruled out on basis of the normal E.S.R. and parasitism (or whatever the cause of the eosinophilia) also appears to be unrelated to the incidence of inverted N/L ratios.

Table 1.—Individuals with Inverted N/L Ratios

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<tr>
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<th>Caucasians</th>
<th>Cape Colored</th>
<th>Bantu</th>
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<tbody>
<tr>
<td>Before selection</td>
<td>9/100 (9%)</td>
<td>17/103 (16.5%)</td>
<td>46/94 (48.9%)</td>
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<tr>
<td>E.S.R. &lt; 10 mm.</td>
<td>9/100 (9%)</td>
<td>16/101 (15.8%)</td>
<td>40/77 (54.8%)</td>
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<tr>
<td>E.S.R. &lt; 5 mm.</td>
<td>8/93 (9.1%)</td>
<td>14/93 (15.1%)</td>
<td>25/63 (37.7%)</td>
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<tr>
<td>Eos. &lt; 400/mm³</td>
<td>8/85 (9.4%)</td>
<td>10/77 (13.0%)</td>
<td>17/31 (54.8%)</td>
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CORRESPONDENCE

The intermediate position of Cape Colored as regards depth of skin pigmentation and incidence of inverted N/L ratios suggest that this phenomenon may be related to control mechanisms of leukocyte levels and skin pigmentation.

Evidence in the literature supports lesser adrenocortical function in Bantu as compared to Caucasians\(^1\)\(^2\) and if due to primary adrenocortical deficiency would imply increased ACTH (and M.S.H.\(^13\)) secretion, thus influencing both leukocyte count and skin pigmentation.

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REFERENCES