

THE NORMAL NUMBER OF EOSINOPHIL CELLS IN THE BLOOD

By

K. H. BAAGØE
Kolding, Denmark

The object-glass method for counting eosinophil cells in the blood has two defects: 1) The eosinophil cells are unevenly distributed in the smear, as they are found in greater number at the points and the edges than in the middle, and 2) the number of eosinophil cells is calculated in proportion to the number of leucocytes, that is, as one writer remarks, the same as if one gave the number of leucocytes in proportion to the number of red blood corpuscles.

A more exact method is to count the absolute number in a counting-chamber. But the method requires training and is time-consuming. Thus *Hanne Uhrbrand* (1957) points out that 500-1000 eosinophil cells must be counted to ensure a fairly reliable result, so the method is not suitable for routine examinations.

According to available examinations of the number of eosinophil cells in normal grown-up persons the number of these cells varies from 10 to 800 per c.mm., and the mean is given as 126 (*Rud* 1947) and 221 (*Fisher & Fisher* 1951). The question then presents itself: What can be the reason for the widely different results?

If one goes through the material of the various writers (*Rud*, *Fisher & Fisher*, *Muercke et al.*, *Uhrbrand*) one finds that the examinations of the number of eosinophil cells in normal persons have been made partly on physicians, medical students, and nurses, who showed no signs of disease, and

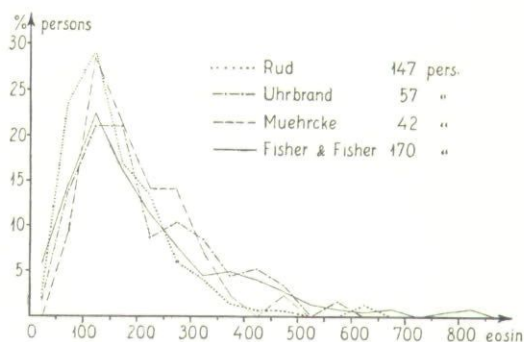


Fig. 1.
Eosinophil count of "normal" persons.

partly on hospital patients with diseases that were not supposed to have any influence on the number of eosinophil cells. The blood samples were all taken in the morning.

To get a clear picture of these examinations I have traced a frequency curve. In Fig. 1 the ordinate represents the percentage of persons, and the abscissa the number of eosinophil cells per c.mm. As will be seen from the figure there is in fact a fairly good agreement of the numbers of the four writers.

The curves show clearly that the vertex in all of them lies at 100–150 eosinophil cells per c.mm., and that they all have several exceeding 300, one (*Fisher & Fisher*) exceeding 800 eosinophil cells per c.mm. The same asymmetric curve is incidentally found by the object-glass method. The circumstance that all investigators have found several with a high number of eosinophil cells is probably due to the existence among normal persons of several with pathological conditions that cause an increased number of eosinophil cells. This seems to be confirmed by Rud's examinations; from his material of normal persons he has separated a special group which he calls those "absolutely normal", and which comprises 71 healthy individuals who neither have, nor have had, adenoids or hypertrophied tonsils and in whom no personal or family allergy has been found.

As will be seen from Fig. 2 there are among these none with

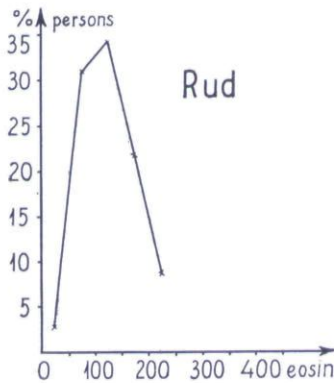


Fig. 2.

Eosinophil count of 71 "absolutely normal" persons.

a number exceeding 250 (the maximum is 248). The curve shows "Normal Distribution", the mean value coinciding with the vertex of the curve. It is this mean value of 126 that Rud gives as normal. This may explain why his mean is considerably lower than that of the other investigators, but as shown above it coincides with the vertex of the frequency curve given by all the other investigators.

If one wants to know how this mean of 126 corresponds to per cent, one must know the normal number of leucocytes, but this is stated somewhat differently. In *Wintrobe's Hematology* (1956) the normal number is stated to be 7000, and on that assumption 126 eosinophil cells per c.mm. corresponds to 1.8 %, which strangely enough, is less than that found by the object-glass method.

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