Letter to the Editor

Changes in neutrophil alkaline phosphatase (NAP) in man

In the recovery phase of severe granulocytopenia, when the marrow reserve of mature granulocytes has been severely depleted, the emergence of NAP-negative cells precedes the appearance of NAP-negative cells (Kelemen, 1973). We have recently demonstrated this following mitobronitol-induced pancytopenia, when NAP-negative cells follow NAP-positive cells three to five days later.

The strongly positive cells derive from the bone marrow, and not from the splenic or marginal pool. Epinephrine infusions, which induce significant leucocytosis, failed to induce any selective increase in strongly NAP-positive cells in the first 15 minutes of experiments, when given to seven normal subjects or to five patients with congestive splenomegaly, either before or after splenectomy.

If the stored mature neutrophil of steady-state conditions is NAP-negative, then the initial response to stimulation should be the release of NAP-negative cells. Lehoczky et al (1973) have demonstrated this in seven patients subjected to abdominal surgery, and in 11 splenectomized, but not leukaemic, patients in whom an initial increase in NAP-negative cells a few hours after surgery was followed by an increase in NAP-positive cells one to five days later.

Thus the number of circulating NAP-positive neutrophils is dependent on this time factor and also on the nature of the marrow granulocyte reserve at the time of the stimulus to release.

Chikkapa et al (1973) have demonstrated that NAP-positivity increases in CGL marrow cells cultured in a marine diffusion chamber system and that NAP-positive granulocytes are formed in cultures even though mitoses are invariably Philadelphia-chromosome positive. During the apparent proliferative phase of granulopoiesis NAP-positive cells appear, whereas cessation of granulopoiesis after day nine is associated with a new increase in NAP-negative cells.

These observations suggest that NAP-negative cells represent an older generation of stored neutrophil bands and segments, whereas when newly formed mature neutrophils emerge, they exhibit strong NAP-positivity.

References


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Book reviews


This is the second edition of a standard American textbook for haematological technologists first published in 1968. It is set out in conventional form with chapters on haemoglobin, erythrocytes, leucocytes, haemolytic anaemias, haemostasis, staining techniques, and miscellaneous tests. Finally, the one chapter devoted to blood transfusion and immunological techniques in the first edition has been expanded to five chapters. In several chapters there is an initial section on physiology, then detailed descriptions of techniques and, finally, a brief clinicopathological review. When it was originally conceived this plan was admirable. It is doubtful, however, if the theoretical and practical aspects of haematological technology can now be adequately encompassed in one small volume. In spite of some excellent descriptions of newer automated equipment the book has a generally dated air. This is epitomized by the use of ‘gr’ (presumably for grain) as a unit of weight (p 207). The fact that, in keeping with American practice, SI units are not generally used may be a disadvantage for some European readers. The terminology of the red cell series (rubriblast to rubricyte) is unfamiliar in the United Kingdom and may be confusing for the beginner. Techniques are often a matter of personal preference but even so some of the descriptions are confusing or incomplete. For example, complicated instructions for washing platelets for aggregation studies are given but washed platelets are not used in the test. The descriptions of the use of isotopes are brief and lack cohesion. The author rightly stresses the importance of quality control but does not deal with it in depth. It is disappointing that there are no sections on safety precautions, data processing, and documentation, which are so important, for instance, in blood transfusion work. An irritating feature is the large number of typographical errors. For the discerner reader there are useful descriptions of standard techniques and some newer equipment, but one would hesitate to recommend the book confidently for general use.

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