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Accepted: March 6, 1985

Acta haemat. 1985;73:184

Granulocytes with Ring-Shaped Nuclei in Severe Alcoholism

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Vacuolization of red [2] and white [3] blood cell precursors, and macrocytosis independent of folate or vitamin B₁₂ deficiency [4, 5] are well-known effects on hemopoiesis in severe alcoholism. We recently observed both neutrophil and eosinophil metamyelocytes and granulocytes with ring-shaped nuclei (fig. 1) on bone marrow smears in 2 out of 5 patients with chronic abuse of alcohol. The incidence of such forms was less than 1 per thousand cells. The presence of cytoplasmic material within the nuclear holes allowed to distinctly differentiate this phenomenon from va-

A B

Fig. 1. Neutrophils and eosinophils with ring-shaped nuclei in a patient with severe alcoholism. A Neutrophil metamyelocyte. $\times 3,000$. B Eosinophil metamyelocyte. $\times 3,000$.

cuolization. Langenhuijsen [1] recently identified neutrophil and eosinophil granulocytes with ring-shaped nuclei in blood and bone marrow of patients with myelodysplastic syndromes and chronic granulocytic leukemia. He also observed ring-shaped white cell nuclei in the blood of 2 out of 20 controls. However, their incidence was significantly higher in patients with chronic granulocytic leukemia. Ring-shaped nuclei may also be a result of alcohol toxicity. We are currently investigating this phenomenon in a large series of patients.

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