Granulocytes with Ring-Shaped Nuclei in Severe Alcoholism

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 vacuolization. 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.

References