

## CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

### Hematology-Cell Morphology – Case 23

- Blasts  $\geq 30\%$  and  $\leq 90\%$  of non-erythroid series cells in bone marrow, with monocytic elements  $< 20\%$
- Well-defined nucleoli
- Differentiation from M1 by the presence of maturation (promyelocytes and or myelocytes), from the myelodysplastic syndromes (blasts  $< 30\%$ ) and from M4 (monocytes in the bone marrow  $> 20\%$ )
- Auer bodies and rods
- Presence of all maturation stages
- Neutrophils with abnormal morphology.

Morphologically, M2 blasts have a varied size and shape, usually an eccentric nucleus with a fine chromatin pattern, numerous well visible nucleoli, deep basophilic cytoplasm, often presence of Auer bodies and maturation to promyelocyte (rare myelocytes, metamyelocytes and neutrophils). Rarely large size blasts with many granules and a well-defined Golgi apparatus as well with simple or multiple Auer bodies are present, while very rarely there exist large cytoplasmic azurophilic granules as in Chediak-Higashi anomaly. Apart from large sized blasts, a varying number of small size blasts with few or without granules may be present (figures 1 to 12). Sometimes the blasts have a basophilic agranular cytoplasm, but with the presence of Auer bodies, and a well visible Golgi apparatus (figures 5, 12). Promyelocytes are often hypogranular or hypergranular,

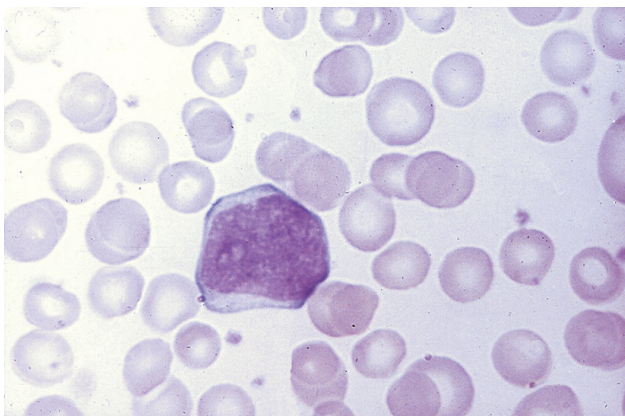


Figure 1

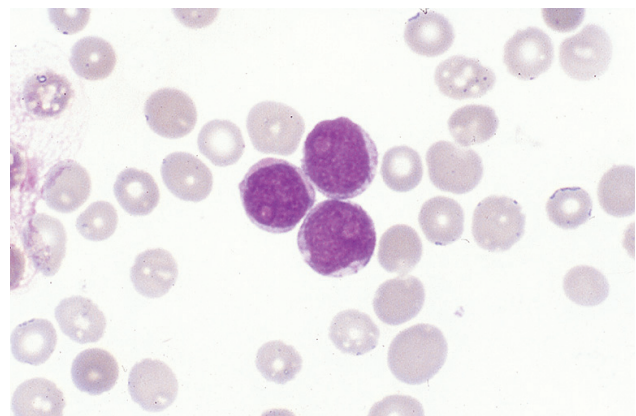


Figure 2

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2024, 41(2):282–285

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while rarely there may be an eosinophilic infiltration (up to 15% eosinophils in bone marrow), usually without concomitant peripheral blood eosinophilia, but, in contrast to M4eos, eosinophilic granulation is normal. Neutrophils with abnormal morphology (figures 13, 14). Very rarely there may be an increase

of basophils and mastocytes in the bone marrow, while blast types with predominant azurophilic, eosinophilic or basophilic granulation may be distinguished. In the bone marrow the erythroblasts are of normal morphology and their number

may be normal or very decreased, while the monocytes and megakaryocytes are scanty or absent.

Peroxidase staining (primary granules and lysosomes): Varying intensity (heavy positive or negative blasts). Often this

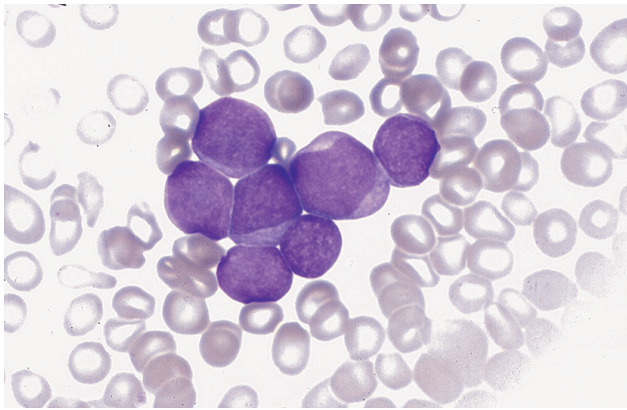


Figure 3

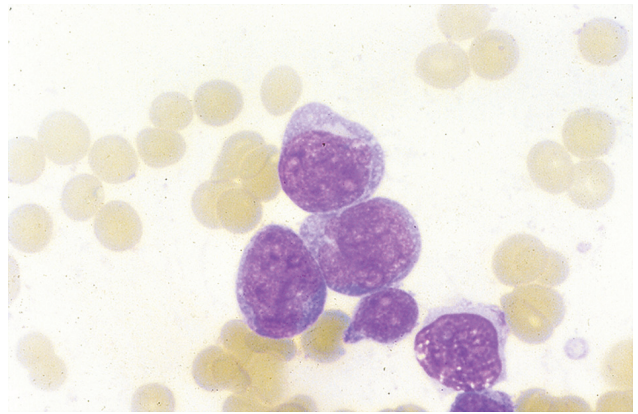


Figure 6

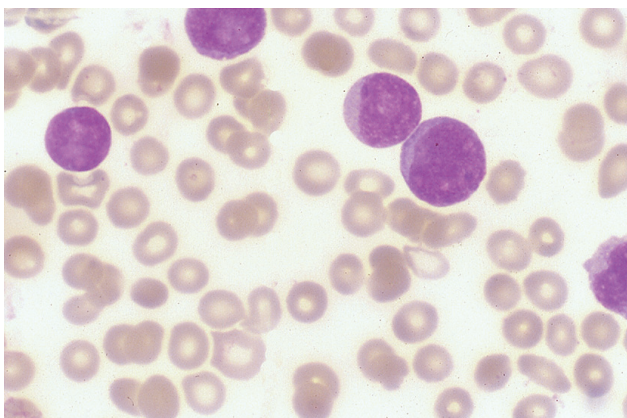


Figure 4

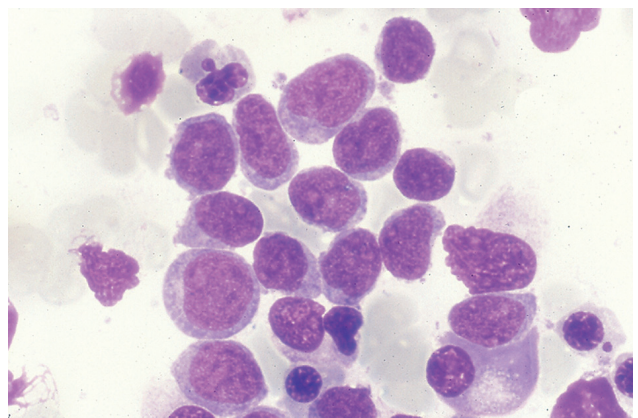


Figure 7

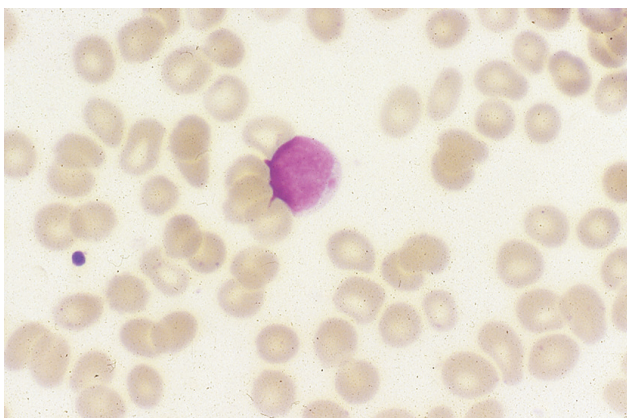


Figure 5

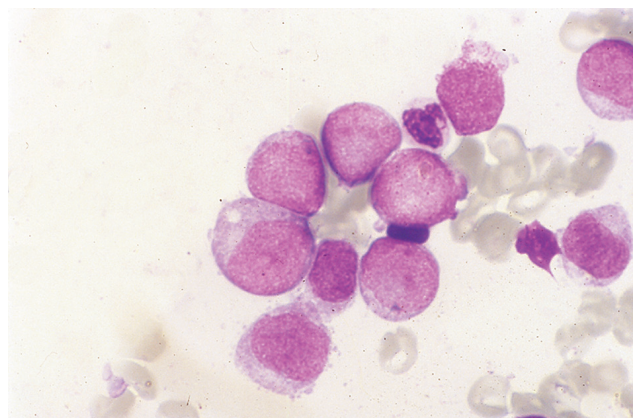
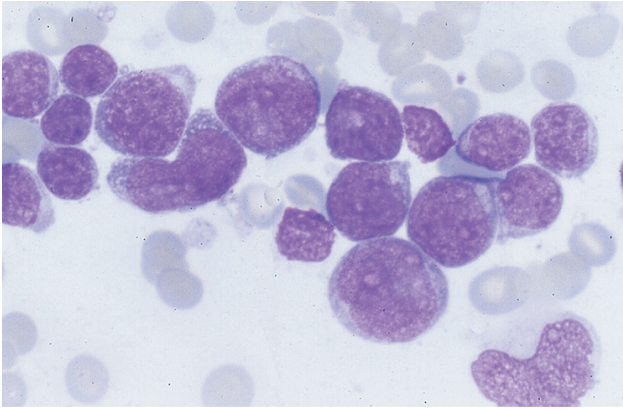


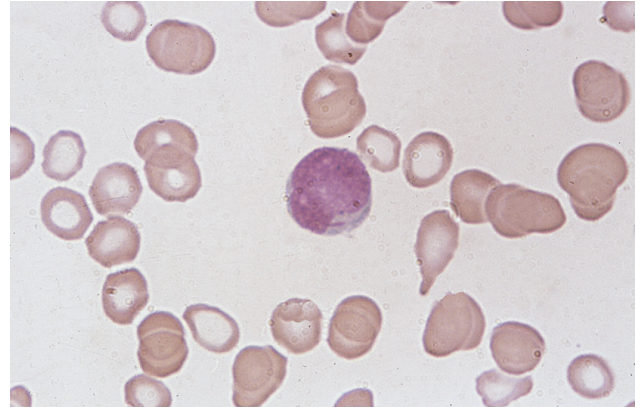
Figure 8

reaction has a small practical value because of the presence of a cytological background with the presence of granulocytic series maturation, although the presence of negative cells of the granulocytic series is possible (figures 15, 16). Sudan black B

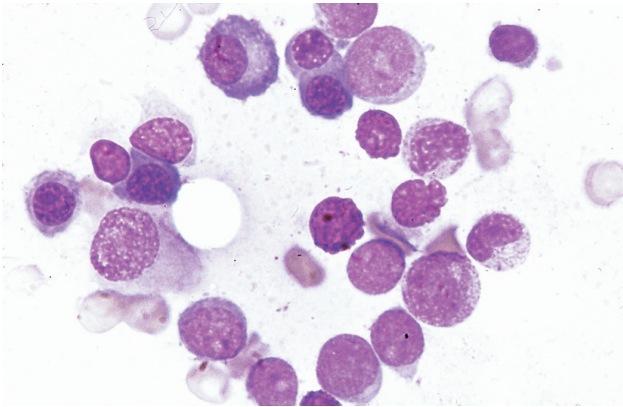
staining: Positive blasts. Specific esterase staining (naphthol AS-D chloroacetate, NACE): Positive blasts. Acid phosphatase staining: Intense or light positivity. PAS staining: Usually negative or a fine granular positivity.



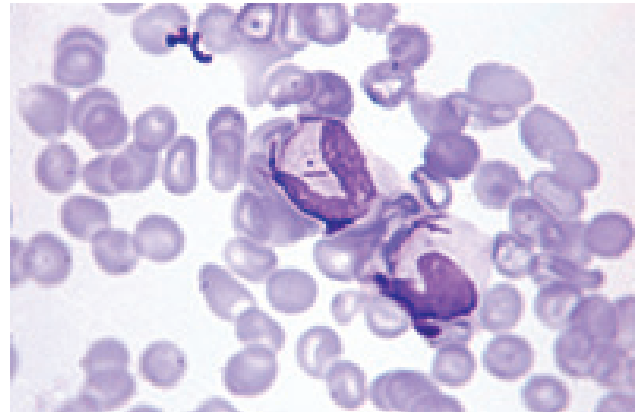
**Figure 9**



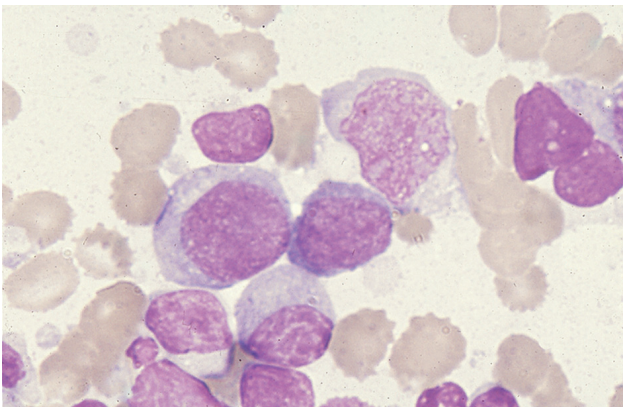
**Figure 12**



**Figure 10**



**Figure 13**



**Figure 11**



**Figure 14**

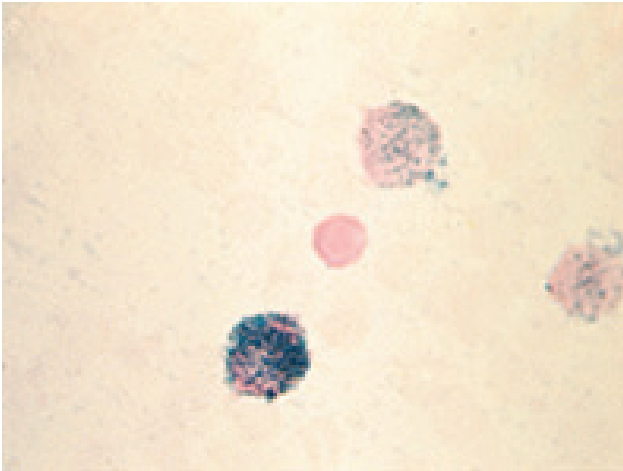


Figure 15

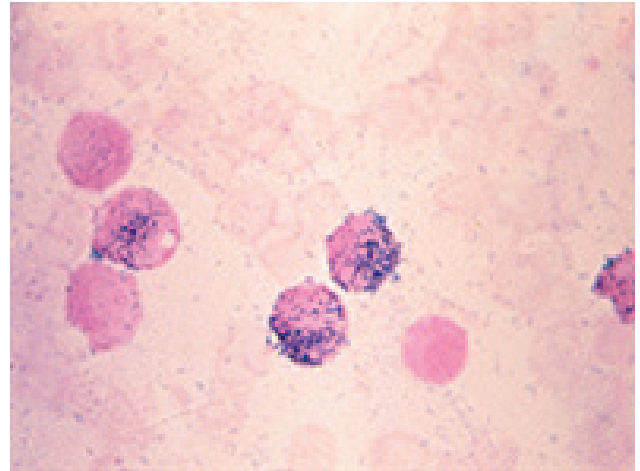


Figure 16

### References

1. MELETIS J. *Atlas of hematology*. 3rd ed. Nireas Publ Inc, Athens, 2009:328-344

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