Educational Material IQAP 1211

The blood film was taken from a 34-year female with malaise. The complete blood count showed Hb 6.4 g/dL, RBC 2.05 x 10^{12} /L, Hct 0.204 L/L, MCV 99.5 fL, WBC 206 x 10^{9} /L and Platelet 73 x 10^{9} /L

This peripheral blood smear shows a marked leucocytosis with the predominance of blasts, promonocytes and a small percentage of monocytes (Figure 1). Neutrophils are rarely noted. Erythrocytes are morphologically unremarkable and platelets are mildly reduced. Monoblasts are large in size with basophilic cytoplasm and round to slightly indented nuclei composed of fine lacy-like chromatin and conspicuous nucleoli. Scattered azurophilic granules and vacuoles are present. Promonocytes have more convoluted nuclei, less basophilic but more granulated cytoplasm (Figure 2).

The bone marrow smear shows diffuse infiltrates of monoblasts, accounting for more than 90% of the nucleated cells. Both immunophenotyping and cytochemistry support the diagnosis of acute monoblastic leukaemia (AML M5a). The monoblasts express CD4 and CD11c on top of myeloid antigens including CD13, CD33 and CD117. Cytoplasmic myeloperoxidase is weakly positive while the non-specific esterase is strongly positive with fluoride inhibition. The cytogenetic study shows a normal karyotype. There is no *MLL* gene re-arrangement by fluorescence in-situ hybridization. Acute myelomonocytic leukaemia (AML M4) is less likely due to the paucity of neutrophils and myelocytes on the peripheral blood film.



Figure 1. A marked leucocytosis with monoblasts, promonocytes and monocytes (400x magnification).



Figure 2. Monoblasts with slightly indented nuclei display lacy-like chromatin and basophilic cytoplasm (1,000x magnification).