ACCURATE DIAGNOSIS OF SOME DIFFICULT CASES OF ACUTE LEUKEMIA. CYTOCHEMISTRY AND IMMUNOPHENOTYPE AS IMPORTANT METHODS IN THIS DIAGNOSIS

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Abstract

Acute leukemias are divided into myeloid (or nonlymphocytic) and lymphoid according to the predominant neoplastic cell line. According to morphology, cytochemical staining and flow cytometry immunophenotyping they are classified according to FAB and WHO classification. In this study we represent some difficult cases of acute leukemia diagnosed on the basis of the interpretation of three methods , morphology with Giemsa romanowsky smear, cytochemistry with citochemical reactions and immunophenotyping by flow cytometry. None of this methods alone can give an accurate diagnosis of the type of leukosis, especially in difficult cases not readily determinable which exhibit nonspecific and aberrant morphological and immunophenotypic features. With morphology, immunophenotyping, and cytochemical tests together, the lineage of differentiation (ALL or AML) can be reproducibly identified in more than 95% of acute leukemias. ALL can be further subclassified based on T versus B precursor differentiation and ALL1-ALL3 according to FAB. AML can be further subclassified in MO-M7 classes according to FAB.

Background

Leukemia is a neoplastic disease characterized by the uncontrolled proliferation of hemopoetic cells. This proliferation is followed by the predominance in the bone marrow and in the peripheral blood of immature lymphoid or myeloid cells (bllasts).

Acute leukemias are classificated according to FAB (French-American-British cooperative group) by finding bllasts in bone marrow e"30% of cells (2).

In 2001, a group convened by the World Health Organization (WHO) published a new classification of hematopoietic and lymphoid neoplasms, including the acute leukemias. The directive for the classification was that it be up to date, incorporate genetic and immunophenotypic as well as morphologic information, and that it also be usable throughout the world, not just in Western academic medical centers. The AML classification includes four groups: AML with recurrent cytogenetic abnormalities, AML with multilineage dysplasia, therapy-related AML and MDS, and AML not otherwise specified, the latter being a modification of the FAB AML classification. The WHO classification does not group the acute lymphoid leukemias together, but separates them under three broader categories of lymphoid disease: precursor B-cell and precursor T-cell neoplasms, and mature B-cell neoplasms (7,8).

The WHO classification uses >20% blasts in the marrow or peripheral blood as a diagnostic criterion (8).

Classification FAB

Acute leukemias are divided into myeloid (or nonlymphocytic) and lymphoid according to the predominant neoplastic cell line (2).