

Atypical Chronic Myeloid Leukemia (aCML)

Identity

Note The nosology of aCML is controversial. The FAB classification includes aCML in the group of chronic myeloid leukemias. Recently the WHO classification has classified aCML in the group of myelodysplastic/myeloproliferative diseases.

Clinics and Pathology

Disease aCMP is a chronic myeloproliferative disorder with a clinical and hematological picture similar to [chronic myelogenous leukemia](#) (CML) but lacking Philadelphia chromosome and [BCR-ABL](#) rearrangement. Atypical CML is characterized by the combination of: 10-20% of immature granulocytes; marked granulocytic dysplasia and both less than 2% of basophils and less than 10% of monocytes.

Phenotype / cell stem origin Presumably a multipotential stem cell.

Epidemiology ACML is a disorder of old adults. No predominance of sex. The incidence is not yet established.

Clinics Anemic syndrome. Splenomegaly. Malaise.

Cytology Peripheral blood: Leukocytosis with an high count of immature granulocytes. By definition monocytes are less than 10% and basophils less than 2%. Anemia is more frequent than thrombocytopenia.
Bone marrow: Hypercellular bone marrow with myelodysplastic features of the three series, most marked in granulocytic lineage. Blast cell infiltration ranges from 0% to 10%.

Treatment Hydroxyurea is indicated, although not curative, in old patients. Complete remission may be achieved after chemotherapy based on anthracyclin and citarabine (an acute myeloblastic leukemia therapy schedule). Allogeneic bone marrow transplantation is curative for those patients who are eligible. Some cases may achieve a complete hematological response after interferon therapy.

Prognosis The median survival is about 24 months with standart therapy. Some cases have a progression to acute myeloblastic leukemia.

Cytogenetics

Cytogenetics Morphological By definition aCML cases lack in Philadelphia chromosome. Overall 50-65% of patients show cytogenetic abnormalities. The most frequent is +8 (25%). Other changes such as 7 and [del\(12p\)](#) have also been

recurrently observed. Other abnormalities are: [idic\(Xq\)](#); [del\(5q\)](#); [t\(6;8\)\(p23;q22\)](#); -9; [del\(11q\)](#); [del\(12q\)](#); [del\(15q\)](#); [del\(17p\)](#); [t\(17;20\)](#) and [add\(21q\)](#). No specific cytogenetic changes have been associated with aCML. Recently a [t\(5;10\)\(q33;q22\)](#) has been described in a patient.

Genes involved and Proteins

Note The mechanisms of oncogenesis in aCML remains to be elucidated. In a patient with a [t\(5;10\)\(q33;q22\)](#) a fusion between the genes PDGFbR, also involved in the [t\(5;12\)\(q33;p13\)](#) in the chronic myelomonocytic leukemia, and [H4](#), a gene involved in [papillary thyroid carcinoma](#), has been described.

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Written 09- Jesus M. Hernandez, Norma C. Gutierrez, Juan L. Garcia
2001

Citation

This paper should be referenced as such :

Hernandez JM, Gutierrez NC, Garcia JL . Atypical Chronic Myeloid Leukemia (aCML). Atlas Genet Cytogenet Oncol Haematol. September 2001 .
URL : <http://www.infobiogen.fr/services/chromcancer/Anomalies/aCMLID2117.html>

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