Proposal of a morphologic bone marrow response score for imatinib mesylate treatment in chronic myelogenous leukemia

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Cytogenetic and molecular analyses are essential disease-monitoring parameters in chronic myelogenous leukemia (CML) treated with imatinib. However, a bone marrow morphologic response has not been defined. We reviewed bone marrow histology and cytology of 39 imatinib-treated patients with CML over 49 weeks and introduced a morphologic response score. A significant positive correlation with a complete cytogenetic response was shown for absence of dry tap ($P = .04$) and abnormal megakaryocytes ($P < 0.001$), normalization of cellularity ($P = .001$) and reduction of fibrosis ($P = .01$), myelopoiesis:erythropoiesis index ($P = .001$), blast ($P = .001$) and basophil count ($P < 0.001$). The morphologic score integrating these parameters showed an early and late correlation with cytogenetic response. In conclusion, morphologic criteria for complete cytogenetic response in patients with CML treated with imatinib can be defined. Persistent high-level morphologic abnormalities herald early on a high likelihood to fail treatment and call for more intense or alternative therapy.

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