

# Treatment Modalities in Hematology: Imatinib Mesylate as Therapy for Chronic Myeloid Leukemia

A. Gratwohl

*Division of Hematology, Department Internal Medicine, Kantonsspital, Basel, Switzerland*

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## **Abstract**

Imatinib mesylate (Glivec<sup>®</sup>/Gleevec<sup>®</sup>) represents a truly new concept in the treatment of chronic myeloid leukemia (CML) and a breakthrough in the therapy of hematological malignancies in general. It blocks the CML specific tyrosine kinase BCR-ABL. This fusion gene product of the BCR-ABL t(9;22) translocation represents the hallmark of the disease, is constitutively activated and thereby directly involved in the pathological regulation of cell growth. Imatinib is a potent and selective inhibitor in vitro. In phase I and II studies it induced durable hematological responses in more than 90% of all patients with chronic phase CML and in a large proportion of patients even in advanced disease with remarkably few side effects. In a prospective randomised phase III study it was compared in 1,106 patients with newly diagnosed patients with CML to the standard approach for CML, interferon- $\alpha$  combined with low-dose arabinosyl cytosine. At median follow up of 14 months, 84% of patients with imatinib showed a major cytogenetic response (68% complete) compared to 30% (7% complete) in the control arm. Survival rate at 12 months without progression to accelerated phase or blast crisis was 98.5% compared to 93.1% in the control arm ( $P=0.001$ ). Tolerance to imatinib was significantly better than the interferon based regimen with nausea and fluid retention as main side effects in the imatinib arm. This study illustrates the superiority of imatinib in inducing hematological and cytogenetic remissions, in tolerability and in preventing progression to advanced phase compared to previous therapy. It can be considered as initial treatment for newly diagnosed CML patients. Imatinib sets the standard for future specific tumor therapies to come.

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