

Immunohistochemical Assessment of the Role of WT1 Protein Expression in CML and its Correlation with CD 31 as an Angiogenic Marker

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Abstract

- Background** Several studies have demonstrated that Wilms' tumour gene 1 (WT1) is consistently overexpressed in most forms of leukemias, and the usefulness of quantitative assessment of WT1 expression as a molecular marker for minimal residual disease (MRD). Many suggest a role of WT1 for angiogenesis in hematological malignancies, WT1 is also expressed in a large variety of tumour blood vessels, and some suggests that it might be a general marker for angiogenesis.
- Objective** To assess the role of WT1 protein expression immunohistochemically in chronic myeloid leukemia (CML) and to determine whether there is a correlation between WT1 protein expression and CD31 expression as a marker of angiogenesis.
- Methods** This study involved 16 cases of newly diagnosed CML. In addition, 20 age matched control cases were involved having no apparent bone marrow pathology. Immunohistochemistry was done on bone marrow biopsies using Anti-WT1 and Anti-CD31 Monoclonal antibodies.
- Results** There was a significant increase in WT1 protein expression in CML cases, as well as an increase in CD31 expression; however, there was no significant correlation between WT1 expression and hematological parameters (WBC count, platelets count, PCV level, and peripheral blood blast %) and CD31 expression.
- Conclusion** This study showed that WT1 is overexpressed in CML patients, while it was undetected in controls, thus we may propose that it maybe used as an auxiliary marker for the disease. WT1 expression was not found to be of prognostic significance. Moreover CD31 as a marker for angiogenesis was significantly increased in CML but did not correlate with WT1 expression.
- Key words** WT1, chronic myeloid leukemia, immunohistochemistry

Introduction

The WT1 gene, located on chromosome 11p13, was first identified in patients with Wilms tumor; it encodes a transcription factor involved in normal and malignant hematopoiesis, unlike other tumor suppressor genes, such as Rb and p53, the expression of the WT1 gene is restricted to a limited set of tissues (fetal kidney, ovary, testis, and spleen) ⁽¹⁾. More recently, WT1 overexpression was detected in several

haematological and solid malignancies. Additional studies revealed that it had a role in the initiation phase of the malignant diseases ⁽²⁾. Since WT1 is believed to be relevant in the maintenance of the malignant phenotype of the tumour cells and is mostly restricted to malignant tissues, it is an attractive target for immunotherapy ⁽²⁾.

Chronic myeloid leukemia (CML) is a malignant clonal blood disease that originates from a pluripotent hematopoietic stem cell. The