

## **Summary and Conclusion**

In recent years, a growing body of evidence has been reported that a tumor clone is organized as a hierarchy that originates from rare stem cells. AC133 represents a marker of cancer stem cells in a number of human cancers like human leukemia and, therefore, it may be possible to develop future therapies targeting these cells via clearer understanding of the molecular mechanisms of AC133-expressing cells.

AC133 (prominin-1) is the first to be identified in a class of novel pentaspan transmembrane glyco-proteins (5-transmembrane, 5-TM) in both humans and mice.

The interest in this molecule has grown exponentially, since it appears to be an important cell surface marker widely used to identify and isolate stem cells from various sources, including the hematopoietic and central nervous systems, as it does not share homology with other hemopoietic stem cell (HSC) surface antigens. It is rapidly down-regulated as human HSCs differentiate into phenotypically restricted cells and this rapid down-regulation during cell differentiation is a characteristic feature of this protein, which makes it a unique cell surface marker for the identification and isolation of stem cells and progenitor cells.

The purpose of the present study was to determine the expression of AC133 molecule on the surface of ALL blasts from patients with acute leukemia in a trial to correlate the expression of this molecule to various clinical, laboratory and standard prognostic factors, as well as to treatment response and clinical outcome of these patients.

Our study was conducted on 30 newly diagnosed patients with acute lymphoblastic leukemia patients were subjected to full medical history taking, thorough clinical examination, complete blood counts, bone marrow examination and immunophenotyping. Flow cytometric analysis of AC133 expression was completed. Clinical follow up of all patients was carried throughout the period of the study to detect the outcome of the disease.

No significant statistical association existed between AC133 positive expression and clinical and laboratory data of all studied patients.

On analyzing the association between AC133 expression and the studied standard prognostic factors of acute leukemia, no significant association existed between AC133 positive expression and any of them in ALL group, except for TLC.

We traced the clinical outcome of our 30 patients. There was a significant association between AC133 positive expression and tendency towards a poor prognosis (i.e. death or resistance to standard chemotherapeutic agents).

Conclusion:

- AC133 expression was highly associated with poor prognosis in acute lymphoblastic leukemia patients.
- AC133 expression is an independent prognostic factor in acute leukemia and its expression could characterize a group of acute leukemia patients with higher resistance to standard chemo-therapy, relapse or death.
- The use of AC133 expression in childhood acute leukemia as a prognostic marker would be recommended to offer a chance for intensive therapeutic intervention in cases designated as having poor prognosis.