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Comparative study of bone marrow and blood plasma level of IL-2 in aplastic anemia and their relation with disease severity

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Statement of the Problem: Interleukin-2 is a potent signaling molecule in the signaling cascade of the immune-mediated activation of T Lymphocytes leading to the destruction of hematopoietic stem cell. This forms the basis of Acquired Aplastic Anemia (AAA). The objective was to study the association of IL-2 in the Bone Marrow Plasma (BMP) and Peripheral Blood Plasma (PBP) in AAA patients.

Method: Institutional ethical clearance was obtained and 52 BMP and PBP-paired samples were collected from the confirmed AAA patients and 10 non-aplastic anemia controls. The level of IL-2 was measured by the quantitative enzyme-linked immunosorbent assay. The IL-2 level was compared between the AAA and control subjects as well as among the various severity grades of AAA. Mann-Whitney U test was used for statistical analysis.

Findings: Significantly higher level of IL-2 was found in the BMP (75.33±41.9 vs. 3.12±1.82; p<0.00001) and PBP (48.54±21.89 vs. 1.99 ±1.25 p<0.00001) of AAA patients compared to the control subjects. The IL-2 levels were higher in patients with VSAA and SAA than those with NSAA in the PBP (65.6±23.61 vs. 31.72±7.64; p=0.00338) and (45.37±16.25 vs. 31.72±7.64; p=0.01468), respectively. The IL-2 levels were higher in patients with VSAA and SAA than those with NSAA in the BMP (115.01±38.91 vs. 38.32±19.49; p<0.00001) and (66.44±23.34 vs. 38.32±19.49; p=0.0006). The IL-2 level was higher in VSAA than SAA in PBP (65.6±23.61 vs. 45.37±16.25; p=0.0114) and BMP (115.01±38.91 vs. 66.44±23.34; p=0.00044).

Conclusion: Higher level of IL-2 in AAA patients compared to controls implies its role in the disease pathogenesis. Also, the higher the level of IL-2, more severe is the disease emphasizing its role in the disease severity.

Biography

Rajib De is an Associate Professor in the Department of Hematology, NRS Medical College and Hospital. He is Hemato-Oncologist and Bone Marrow Transplant Physician. His area of interest is thalassemia, acute lymphoblastic leukemia and aplastic anemia. He has more than 10 publications in different national and international index journals. Some of his research areas are screening of thalassemia carrier by nanotechnology-based method, label free characterization for hematopoietic stem cells by nanotechnology-based methods, development of SPION (Super Paramagnetic Iron Oxide Nanoparticle) based ferritin sensor, gene micro mapping of thalassemia in West Bengal, etiological role of environmental and genetic factors in aplastic anemia, phenotypic variation of Hb E-Beta Thalassemia.

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