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Immunohistochemical expression of VEGF in relation to VEGFR and CD34 in NHL using digital image analysis system

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Background: Lymphoma growth and progression appear to be promoted by at least two distinct angiogenic mechanisms: autocrine stimulation of tumor cells via expression of Vascular Endothelial Growth Factor (VEGF) and Vascular Endothelial Growth Factor Receptor (VEGFR) by lymphoma cells, and paracrine influences of the proangiogenic tumor microenvironment on local tumor vascularity.

Objectives: To assess autocrine effect of VEGF, by studying the correlation of VEGF expression with its receptor VEGFR expression in NHL. And to assess paracrine effect of VEGF, by studying the correlation of VEGF expression with CD34 expressed on endothelial cells in Non-Hodgkin Lymphoma (NHL)

Materials and Methods: A cross sectional study was designed. A total of 66 bone marrow tissue samples were included in the study, all diagnosed as having NHL according to working formulation. From each block, 3 sections were taken, and were immunohistochemically stained for CD-34, VEGF and VEGFR. Scoring of Immunohistochemical staining was performed using specialized automated cellular image analysis system, Digimizer software, version 3.7.

Results: VEGF Immunohistochemical digital parameters named digital labeling index (DLI) was significantly correlated with the followings; VEGFR (DLI) [P =0.042, r =0.324], CD34 stained area (A) [P=0.037, r =0.556]. Also VEGFR (DLI) was significantly correlated with CD34 (A).

Conclusion: Autocrine and paracrine effect of VEGF is evident in NHL, as there is positive correlation between VEGF expression and VEGFR expression, and as tumor vascularity increase with the increase in VEGF expression.

Keywords: NHL, VEGF, VEGFR

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