



Serum vascular endothelial growth factor (VEGF) as tumor marker in human cancer

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Dear Friends,

Welcome to the special issue of the International Journal of Ocular Oncology and Oculoplasty. This edition focuses on rare primary orbital tumors and metastatic lid carcinoma and chemo-resistance in retinoblastoma. Cure and control of ocular malignancy is always challenging. Several biological mechanisms are responsible for tumor progression and recurrence.

Angiogenesis i.e. sprouting of new blood vessels play a critical role in the initial development of cancer as well as in tumor growth, progression and metastasis. It has been reported that increased intratumoral microvessel density correlated with high incidence of metastasis and poor prognosis.^(1,2) The disruption of tumor angiogenesis may disrupt the tumor growth.⁽³⁾ Angiogenesis depends on balance between positive and negative angiogenic factors released by the tumor cells. Tumor cells secrete a variety of stimulating factors like fibroblast growth factor, transforming growth factor, platelet derived endothelial growth factor and hepatocyte growth factor. These Biomarkers are used to assess angiogenesis.

Vascular endothelial growth factor (VEGF) is a potent angiogenic cytokines. It is a dimeric (34-50Kd protein), heparin-binding glycoprotein and exists in several isoforms. VEGF increases permeability of endothelial cells. VEGF stimulates endothelial cell proliferation, maturation/ differentiation and migration and also promotes the growth, proliferation, survival and migration of tumor cells. Neoangiogenesis promotes the tumor progression by delivering nutrients and oxygen which is essential for growth, facilitating the penetration of tumor cells through the vessel wall and their transport to distant organs.⁽⁴⁾ VEGF is regulated by several stimulating factors including hypoxia, cytokines such as (IL)-1, loss of functional mutation of p⁵³ and activation of certain oncogenes.⁽⁵⁾ Various investigators have demonstrated correlation between VEGF expression and poor prognosis, nodal metastasis and vessel density.⁽⁶⁾ Further studies need to be conducted to evaluate the prognostic value of circulating VEGF levels in patients of various ocular malignancies and potential role of anti-angiogenic agents in the treatment of different types of ocular malignancies.

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