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Expression of Hypoxia Inducible Factor-1 α and microvessel density in head and neck squamous cell carcinomasD. Soni¹, S. Mukhopadhyay¹, G. Goel¹, V. Gupta², S. Das³, N. Kapoor¹¹Department of Pathology & Lab Medicine¹, ²Department of Otorhinolaryngology, ³Department of Radiotherapy³, All India Institute of Medical Sciences, Bhopal, India

Introduction and objectives: Hypoxia is a key tumour microenvironmental factor in head and neck squamous cell carcinomas (HNSCC) implicated in local neo-angiogenesis, tumour growth and tumour resistance to radio and chemotherapies. Immunohistochemical expression analysis of hypoxia-inducible factor-1 α (HIF1 α), a biomarker of hypoxia, and assessment of micro-vessel density (MVD) for neo-angiogenesis may provide oncologists with an opportunity to select customized hypoxia modifying therapies for their patients.

Methodology: In this descriptive observational study carried out in a tertiary care hospital in central India, immunohistochemical expression of HIF1 α and MVD through CD31 was evaluated in paraffin-embedded tumour resection tissue of 44 patients of HNSCC. Associations among HIF1 α and MVD with the clinical parameters and histological prognostic variables were investigated.

Results: Both cytoplasmic and nuclear staining of HIF1 α were observed in tumour cells, with stronger expression noted in well-differentiated areas with keratinization. Our results demonstrated overexpression of HIF1 α in higher grade tumours (T3/T4, 66.7%) compared to lower grade ones (T1/T2) associated with higher MVD scores in all these cases.

Discussion: Current literature describes an association of strong HIF1 α protein expression with increased vascularization of solid tumours and a prognostic role for the same in predicting survival and disease relapse.

Conclusion: The findings in our study suggest that HIF1 α overexpression and MVD can be used as prognostic markers and may play a role in postoperative radiotherapy response, helping oncologists to choose customized hypoxia modifying treatment for each patient.

Keywords: hypoxia, HIF1 α , CD31, micro-vessel density, head and neck squamous cell carcinoma

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