



# Significance of the expression of integrin $\beta$ 1, VEGF and MVD in hypopharyngeal squamous cell carcinoma

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**ABSTRACT.** This study aimed to determine the expression of integrin  $\beta$ 1 and vascular endothelial growth factor (VEGF) and microvascular density (MVD) by CD105 staining in hypopharyngeal squamous cell carcinoma to determine their association with clinicopathologic characteristics, and to determine their role and the effects of their interactions in the development and progression of hypopharyngeal squamous cell carcinomas. The expression of integrin  $\beta$ 1 and VEGF and MVD in hypopharyngeal squamous cell carcinomas and normal hypopharyngeal tissues were evaluated using immunohistochemistry. The Image-Pro Plus software was used to determine the mean optical density of the immunohistochemical images. Integrin  $\beta$ 1 expression was significantly higher in hypopharyngeal squamous cell carcinoma tissues (78.00%) than in normal hypopharyngeal tissues (35.00%;  $P = 0.001$ ) and significantly differed across pathologic grades and different T stages, and regarding the presence of cervical lymph node metastasis ( $P < 0.05$ ). VEGF expression was significantly

higher in hypopharyngeal squamous cell carcinoma tissues (74.00%) than in normal hypopharyngeal tissues (30.00%;  $P = 0.002$ ), VEGF overexpression differed significantly across different pathologic grades and different T stages, and regarding the presence of cervical lymph node metastasis ( $P < 0.05$ ). The MVD count was significantly higher in hypopharyngeal squamous cell carcinoma tissues ( $37.10 \pm 5.95$ ) than in normal hypopharyngeal tissues ( $8.70 \pm 3.34$ ;  $P = 0.000$ ). MVD differed significantly across different pathologic grades and different T stages, and regarding the presence of cervical lymph node metastasis ( $P < 0.05$ ). The expression of integrin  $\beta 1$  and VEGF and the MVD count exhibited no significant differences in terms of age, gender, history of smoking, and clinical stages ( $P > 0.05$ ). VEGF expression was positively associated with the MVD count of hypopharyngeal squamous cell carcinomas ( $r = 0.582$ ,  $P = 0.000$ ); however, integrin  $\beta 1$  was not associated with VEGF or MVD ( $P > 0.05$ ). Integrin  $\beta 1$  and VEGF are overexpressed and MVD increased in hypopharyngeal squamous cell carcinomas. VEGF is positively correlated with MVD.

**Key words:** Integrin  $\beta 1$ ; Vascular endothelial growth factor; Microvascular density; Hypopharyngeal neoplasms; Squamous cell carcinoma; Immunohistochemistry