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THE DETECTION OF HYPOXIA MARKERS IN NON-HPV AND HPV-ASSOCIATED HEAD AND NECK CANCERS: IMPLICATIONS TO PATIENT SURVIVAL

JANA ŠMAHELOVÁ[a]*, BARBORA POKRÝVKOVÁ[a], ELIŠKA ŠTOVÍČKOVÁ[a], ONDŘEJ VENCÁLEK[b], MICHAL ŠMAHEL[a], MAREK GREGA[c], JAN KLOZAR[d], RUTH TACHEZY[a]

[a] Department of Genetics and Microbiology, Faculty of Science, Charles University, BIOCEV, Průmyslová 595, 252 50 Vestec, Czech Republic, [b] Department of Mathematical Analysis and Applications of Mathematics, Faculty of Science, Palacky University in Olomouc, 771 46 Olomouc, Czech Republic, [c] Department of Pathology and Molecular Medicine, 2nd Faculty of Medicine, Charles University, 150 06 Prague, Czech Republic, [d] Department of Otorhinolaryngology and Head and Neck Surgery, 1st Faculty of Medicine, Charles University, University Hospital Motol, 150 06 Prague, Czech Republic
smahelovaj@natur.cuni.cz

In the microenvironment of growing solid tumors, oxygen level often decreases and a hypoxic state is induced. This can lead to a worse treatment response and poor patient prognosis. One of the hypoxia-responsive genes is aspartate-β-hydroxylase (*ASPH*), whose activity promotes the growth, invasiveness, and metastasis of many solid tumors[1]. Head and neck cancers (HNC) are highly heterogeneous. A proportion of HNC is induced by high-risk human papillomavirus (HPV) infections and is associated with better patient outcomes compared to patients with tumors linked to tobacco and alcohol abuse.

In our study, we analyzed 93 HNC specimens. ASPH and selected endogenous hypoxia markers (HIF1A, HIF2, VEGFA, GLUT1, P4HA1, CA9, MMP9, and MMP13) were detected by multiplex fluorescent immunohistochemistry. The results were correlated with tumor etiology, clinical and pathological characteristics of the patients. The Cox proportional hazards model was used to evaluate the prognostic value of the analyzed markers.

Statistically significant higher protein expressions of ASPH, HIF1A, GLUT1, and MMP13 were detected in the HPV-positive tumor group compared to the HPV-negative group. Except for MMP9/13, higher expression of the markers was detected in the tumor parenchyma compared to the stroma. Increased protein expression of GLUT1 and HIF1A had a positive impact on 5-year overall and disease-free survival in HNC patients, independently of HPV tumor status.

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REFERENCE

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