Annals of Nuclear Medicine Vol. 19, No. 4, 335–338, 2005

Hexokinase-II expression in untreated oral squamous cell carcinoma: comparison with FDG PET imaging

Mei TIAN,*[1,2] Hong ZHANG,*[1] Tetsuya HIGUCHI,*[2] Noboru ORIUCHI,*[2] Yoshiki NAKASONE,*[3] Kuniaki TAKATA,*[4] Nobuaki NAKAJIMA,*[5] Kenji MOGI*[3] and Keigo ENDO*[2]

*[1]*Department of Nuclear Medicine, Second Affiliated Hospital of Zhejiang University School of Medicine, Hangzhou, Zhejiang, China*
*[2]*Department of Nuclear Medicine and Diagnostic Radiology, Gunma University School of Medicine, Maebashi, Gunma, Japan*
*[3]*Department of Oral and Maxillofacial Surgery,* *[4]*Department of Anatomy, and* *[5]*Department of Pathology, Gunma University School of Medicine, Maebashi, Gunma, Japan*

Hexokinase is thought to be one of the key factors of glucose catabolism in the cell. The aim of this study was to investigate the relationship between HK-II expression and ^{18}F-fluoro-2-deoxy-D-glucose (FDG) uptake in human untreated oral squamous cell carcinoma (OSCC). Pre-operatively FDG positron emission tomography (PET) was performed 60 min after FDG injection in all the patients. Maximum standardized uptake value (SUV) was used for evaluation of tumor FDG uptake. Tumor sections were stained immunohistochemically for HK-II. All the tumor sections stained positive for HK-II. Eighteen (95%) tumors in HK-II showed immunostained positive area ≥50%. HK-II findings revealed eleven (58%) tumors with strong intensity, six (32%) with moderate intensity and two with weak intensity (10%). There was no statistically significant correlation between SUV and the expression of HK-II ($p = 0.46$). In conclusion, OSCC showed increased FDG accumulation and overexpression of HK-II. However, we did not find any significant relationship between high FDG uptake and overexpression of HK-II in this patient population, and thus other properties need to be evaluated in order to elucidate key factors responsible for FDG activity in OSCC.

Key words: hexokinase-II, immunohistochemistry, FDG PET, oral squamous cell carcinoma