

Cellular density dependent FDG uptake by the squamous carcinoma of head and neck region

M.Shozushima, M.Izumisawa, T.Takahashi, H.Sato, S.Shoji
M.Hoshino, H.Sato^{*1}, M.Sato^{*1} and K.Sakamaki

Department of Dental Radiology, School of Dentistry, Iwate Medical University

^{*1}Department of Oral Pathology, School of Dentistry, Iwate Medical University

19-1 Uchimaru, Morioka, 020-8505

Abstract

FDG-uptake can vary even among different cases of the same histologic type. However, the details of this phenomenon have not yet been elucidated. In current study, we analyzed the relationship between the histopathological findings in oral squamous cancer and FDG-uptake on PET. Forty-five cases who had been diagnosed with oral squamous cell carcinoma and had undergone FDG PET before treatment were studied. FDG-uptake was assessed as the standardized uptake value (SUV) normalized to the administered dose of radionuclide and the body weight of the patient. The relationship between the mean SUV and the following parameters was examined: histological grade of malignancy, degree of cell differentiation, size and/or local extent of the primary lesion, and cell density of tumor. The mean SUV of FDG-uptake did not depend on the histological grade or the degree of cell differentiation, but tended to be greater the larger the primary lesion. SUV also depended on cell density; the greater the percentage of tumor parenchyma, the higher the SUV. It has been reported that the SUV of FDG was influenced by the cell-cycle-dependent uptake by cancer and the uptake by non-neoplastic cellular elements. In addition, we found that cancer cell density greatly influenced the SUV of FDG in that cancer tissue.