Detection of local residual tumor after laryngeal cancer treatment using FDG-PET

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Objective: Fluorine-18-fluorodeoxyglucose positron emission tomography (FDG-PET) is sometimes used as a means of follow-up after diagnosis and treatment of cancers of the head and neck region. The present study was undertaken to evaluate the ability of FDG-PET to detect local residual tumor after treatment of laryngeal cancer. *Methods:* Thirty-six patients with laryngeal cancer underwent FDG-PET before and after initial treatment. Of these patients, 20 received FDG-PET before treatment and 28 received it after treatment. The relationship between standardized uptake values (SUV) and the presence or absence of local residual tumor was investigated by setting the cut-off value of the SUV using the receiver operating characteristics (ROC) curve. *Results:* When the pre-treatment SUV threshold for laryngeal cancer was set at 7.20, the detection of local residual tumor after treatment using FDG-PET had a sensitivity of 77.78%, specificity of 81.82%, false positive rate of 18.18%, false negative rate of 22.22%, accuracy of 80% and a p value of 0.02. When the post-treatment SUV threshold for the larynx was set at 3.35, the test had a sensitivity of 93.75%, specificity of 91.67%, false positive rate of 8.33%, false negative rate of 6.25%, accuracy of 92.86% and a p value of 0.0001. *Conclusions:* FDG-PET was found to be useful for determining the presence of local residual tumor after treatment of laryngeal cancer.

Key words: laryngeal cancer, residual tumor, FDG-PET, SUV