

Utility of FDG uptake in Various Regions of Waldeyer's Ring for Differentiating Benign from Malignant Lesions in the Lateral Pharyngeal Recess of the Nasopharynx

許重輝;陳遠光

Yen-Kung Chen;Chen-Tau Su;Chen-Tau Su;Ru-Hwa Cheng;Su-Chen Wang;Chung-Huei Hsu

摘要

Abstract

Focally increased 18F-FDG uptake in the lateral pharyngeal recess (LPR) of the nasopharynx due to a benign or malignant lesion is not an uncommon finding on PET images. The aim of this study was to evaluate whether, on PET/CT images, 18F-FDG uptake occurs with characteristic patterns and intensities in various regions of Waldeyer's ring that can improve our ability to differentiate benign from malignant lesions. Methods: Data generated from the 18F-FDG PET/CT images of 1,628 subjects in our cancer-screening program were analyzed. Increased uptake in the LPR was observed in 80 subjects (4.9%) presenting with benign lesions, including 53 subjects without and 27 subjects with symptoms of upper airway discomfort. In addition, 30 healthy controls and 21 patients with newly diagnosed nasopharyngeal carcinoma were recruited for this study. Visual uptake, measurements of the lesions' standardized uptake value (SUV), and any abnormalities on PET/CT were evaluated. The receiver-operating-characteristic curve and area under the curve were applied to evaluate the discriminating power. Results: Increased 18F-FDG uptake (SUV, mean \pm SD) was found in the LPR, with a statistically significant ($P < 0.001$) difference between benign lesions (3.0 ± 1.16) and malignant lesions (7.03 ± 3.83). However, associated increased uptake exclusively in the palatine tonsil, lingual tonsil, and submandibular gland was found in both asymptomatic and symptomatic subjects. The ratio of LPR uptake to palatine tonsil uptake (N/P ratio) in benign lesions (0.81 ± 0.37) was significantly ($P < 0.001$) lower than that in malignant lesions (2.30 ± 1.62). Higher incidences of asymmetric 18F-FDG LPR uptake, cervical lymph node uptake, and asymmetric wall thickening of the LPR on CT were observed in patients with nasopharyngeal carcinoma. When an SUV of less than 3.9 and an N/P ratio of less than 1.5

were used as cutoff points in subjects showing the combination of symmetric uptake in the LPR and normal or symmetric wall thickening, and detectable lymph node uptake, the area under the curve for benign lesions on PET/CT was 0.932 ± 0.042 (95% confidence interval, 0.86 – 0.98), with a sensitivity of 90.4% and a specificity of 93.8%. Conclusion: The intensity and patterns of ^{18}F -FDG uptake in various regions of Waldeyer's ring along with CT scan findings provide a feasible modality to differentiate benign from malignant nasopharyngeal lesions