Complementry role of 18F-Fluorodeoxyglucose positron emission tomography and 131I scan in the follow-up of post-therapy differentiated thyroid cancer

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摘要

Abstract

BACKGROUND AND PURPOSE: 18F-fluorodeoxyglucose positron emission tomography (FDG-PET) is a relatively new modality in the follow-up of patients with differentiated thyroid cancer (DTC) who have undergone total thyroidectomy and postoperative radioiodine therapy. The aim of this study was to assess the diagnostic value of FDG-PET, comparing it with 131I whole-body scan (WBS) and 201Tl WBS. METHODS: Fifteen selected patients with local invasive and/or aggressive DTC were included in this study. The follow-up period ranged from 1 to 12 years, with a mean +/- standard error of 6 +/- 3 years. FDG-PET was performed when patients were still receiving thyroxin therapy. RESULTS: In the cervical region, residual cancer in two patients was demonstrated by FDG-PET, but could not be detected using 131I WBS or 201Tl WBS. Pathology of the surgical specimen showed dedifferentiation of thyroid cancer in one of these patients. Metastatic cervical lymph nodes were detected using FDG-PET in three patients, but in only onepatient using 131I WBS and in another one patient using 201Tl WBS. Mediastinal metastases were detected using FDG-PET in three patients, 131I WBS in two patients, and 201Tl WBS in one patient. Diffuse lung metastasis was detected only by 131I WBS in two patients. The use of FDG-PET in conjunction with computerized tomography provided useful diagnostic information about small nodular lesions of the lung which could not be localized by 131I WBS or 201Tl WBS in three patients. In skeletal metastases, 131I WBS detected more metastatic lesions than FDG-PET or 201Tl WBS, especially when the lesions were located in the pelvis. CONCLUSIONS: In the follow-up evaluation of patients with post-therapy DTC, FDG-PET was useful for detecting dedifferentiated lesions and was superior to

131I WBS in detecting residual cervical or mediastinal lesions and suspected small metastatic foci in the lung. FDG-PET was inferior to 131I WBS in detecting diffuse lung metastases and distant bone metastases.