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^{18}F-FDG PET/CT显像在鼻咽癌综合治疗后随访中的诊断及预后评估效能

Efficacy of ^{18}F-FDG PET/CT in diagnosis and prognosis for nasopharyngeal carcinoma patients during follow-up after comprehensive therapy

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中文摘要:

目的:评价^{18}F-FDG PET/CT显像对鼻咽癌患者综合治疗后随访的诊断效能及其预后评估价值。方法:收集鼻咽癌综合治疗后患者89例,回顾^{18}F-FDG PET/CT和常规影像学诊断结果,并与组织病理学诊断和(或)长期临床随访资料进行比较,计算^{18}F-FDG PET/CT与常规影像学在鼻咽癌综合治疗后对残留、复发或转移诊断的灵敏度、特异度、准确性、阳性预测值(PPV)及阴性预测值(NPV)。结合^{18}F-FDG PET/CT图像及患者临床表现做定性诊断,勾画鼻咽部局部病灶并测量最大标准摄取值(SUV_{max})。以ROC曲线确定^{18}F-FDG PET/CT诊断最佳SUV_{max},以定性诊断结果和ROC曲线最佳SUV_{max}为界点行生存分析,以性别、年龄、鼻咽部SUV_{max}、治疗方法、病灶数目进行COX比例风险回归模型分析,观察影响整体生存率(OS)及无病生存率(DFS)的因素。结果:89例患者平均生存(69.22±4.46)个月,5年OS为73.00%。^{18}F-FDG PET/CT诊断灵敏度、特异度、准确率、PPV及NPV分别为100%(59/59)、90.20%(46/51)、95.45%(105/110)、92.19%(59/64)和100%(46/46);传统影像学分别为75.86%(44/58)、78.85%(41/52)、77.27%(85/110)、80.00%(44/55)和72.73%(40/55),^{18}F-FDG PET/CT灵敏度和准确率高于传统影像学(P均<0.01)。鼻咽部SUV_{max}=2.5时^{18}F-FDG PET/CT诊断效能最佳,SUV_{max}<2.5患者5年OS为81.90%,高于SUV_{max}≥2.5者为62.00%(P=0.036)。^{18}F-FDG PET/CT阴性患者5年OS为100%,阳性者59.90%(P=0.006)。COX比例风险回归模型分析显示,根据SUV_{max}和病灶数目(RR=2.734;P=0.005)可预测OS,病灶数目是影响DFS(RR=2.105;P=0.008)的主要因素。结论:^{18}F-FDG PET/CT诊断鼻咽癌患者综合治疗后复发和(或)转移具有较高灵敏度和准确率;鼻咽部SUV_{max}=2.5可能是^{18}F-FDG PET/CT诊断的最佳界值点;^{18}F-FDG PET/CT定性诊断为阳性以及鼻咽部SUV_{max}≥2.5 患者的远期生存预后不佳。根据鼻咽部SUV_{max}和病灶数目可以预测OS,病灶数目同时是影响DFS的主要因素。

英文摘要:

Objective: To evaluate the efficacy ^{18}F-FDG PET/CT in diagnosis and prognosis for nasopharyngeal carcinoma (NPC) patients during follow-up after comprehensive therapy. **Methods:** A total of 89 NPC patients after comprehensive therapy were included, and the diagnostic results of ^{18}F-FDG PET/CT and traditional imaging were analyzed and compared with histopathological diagnosis or clinical follow-up data retrospectively. The diagnostic sensitivity, specificity, accuracy rate, positive predictive value (PPV) and negative predictive value (NPV) of residual, recurrent or metastasis were calculated, respectively. The qualitative diagnosis using the maximal standard uptake value (SUV_{max}) was determined. ROC curves were determined to assess the optimal cutoff value for evaluating diagnostic value of ^{18}F-FDG PET/CT and predicting survival, while qualitative diagnosis was predicted survival. COX proportional hazards regression model analysis was performed to identify the prognostic factors which impact overall survival (OS)and disease-free survival (DFS). **Results:** In all 89 patients, five-year OS of all patients was 73.00%, and the mean survival time was (69.22±4.46) months. The diagnostic sensitivity, specificity, accuracy rate, PPV and NPV of ^{18}F-FDG PET/CT and conventional imaging was 100% (59/59), 90.20% (46/51), 95.45% (105/110), 92.19% (59/64), 100% (46/46) and 75.86% (44/58), 78.85% (41/52), 77.27% (85/110), 80.00% (44/55), 72.73% (40/55), respectively. The sensitivity and accuracy rate of ^{18}F-FDG PET/CT were high than those of traditional imaging (both P<0.01). From ROC curve, the cut off value of SUV_{max} was 2.5, which might be the best diagnostic value in the follow-up of NPC. Patients with SUV_{max} below 2.5 had significantly better 5-year OS than those with SUV_{max}≥2.5 (81.90% vs 62.00%, P=0.036). ^{18}F-FDG PET negative patients had long 5-year OS than positive ones (59.90% vs 100%, P=0.006). COX proportional hazards regression model analysis showed both SUV_{max} (relative risk [RR]=1.205, P=0.014) and number of lesions (RR=2.734, P=0.005) could be used to predict OS. For DFS, number of lesions (RR=2.105, P=0.008) might have predictive relevance. **Conclusion:** ^{18}F-FDG PET/CT imaging has significantly higher sensitivity and accuracy rate than conventional imaging in detection of the residual, recurrent and metastasis of NPC after comprehensive therapy. SUV_{max} being 2.5 may be a relatively good diagnostic value in the following-up, and may also have great valuable for predicting long-term survival. SUV_{max} and number of lesions may be predictors for OS and DFS, and number of lesions may be an important factor for DFS.