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Department of General, Visceral and Cancer Surgery
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Value of positron emission tomography for the primary staging of gastric cancer

Christoph T. H. Baltin [1], H. Alakus[1], M. Schmidt[2], E. Bollschweiler [1], A. H. Hölscher [1], S. P. Mönig [1]

[1] Department of General, Visceral and Cancer Surgery, University Hospital of Cologne, Germany

[2] Department of Nuclear Medicine, University Hospital of Cologne, Germany

Objectives

The positron emission tomography (PET) is increasingly used in solid tumors such as lung cancer and esophageal cancer (1,2). The aim of our study was to analyze the quality of the PET scan for the detection of the primary tumor and lymph node metastasis in gastric cancer.

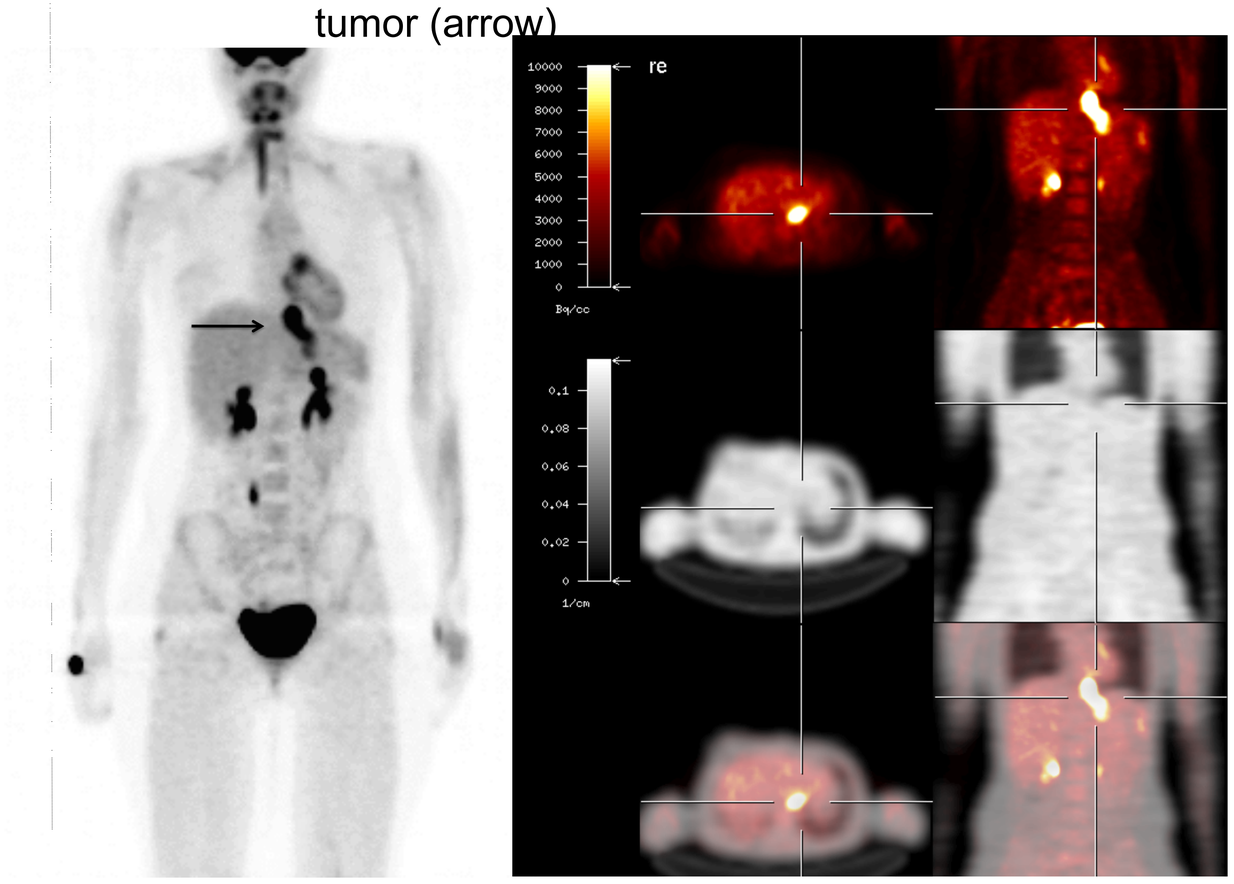
Methods

In our prospective observational study, 30 patients were analyzed with a primary gastric carcinoma. All patients received preoperative FDG-PET scan and were subjected to a D2 gastrectomy. Included in the study were three T1 carcinomas, 17 T2 carcinomas, and 10 T3/4 carcinomas. 21 patients (70%) had lymph node metastases. Results of the PET scan with respect to primary tumor and regional lymph nodes (N) were correlated with histopathologic findings.

Results

The primary tumor was detected in 29 patients (97%) in the PET scan. Diffuse gastric cancer, however, showed a significantly decreased FDG uptake (3). For the assessment of the N status, 26 patients could be analyzed. PET scan was negative in 24 patients and positive in 2 patients (2 true positive, 15 false negative). The sensitivity of PET scanning for the assessment of N status was thus 12%, the specifity was 100%, and the accuracy was 42,3%.

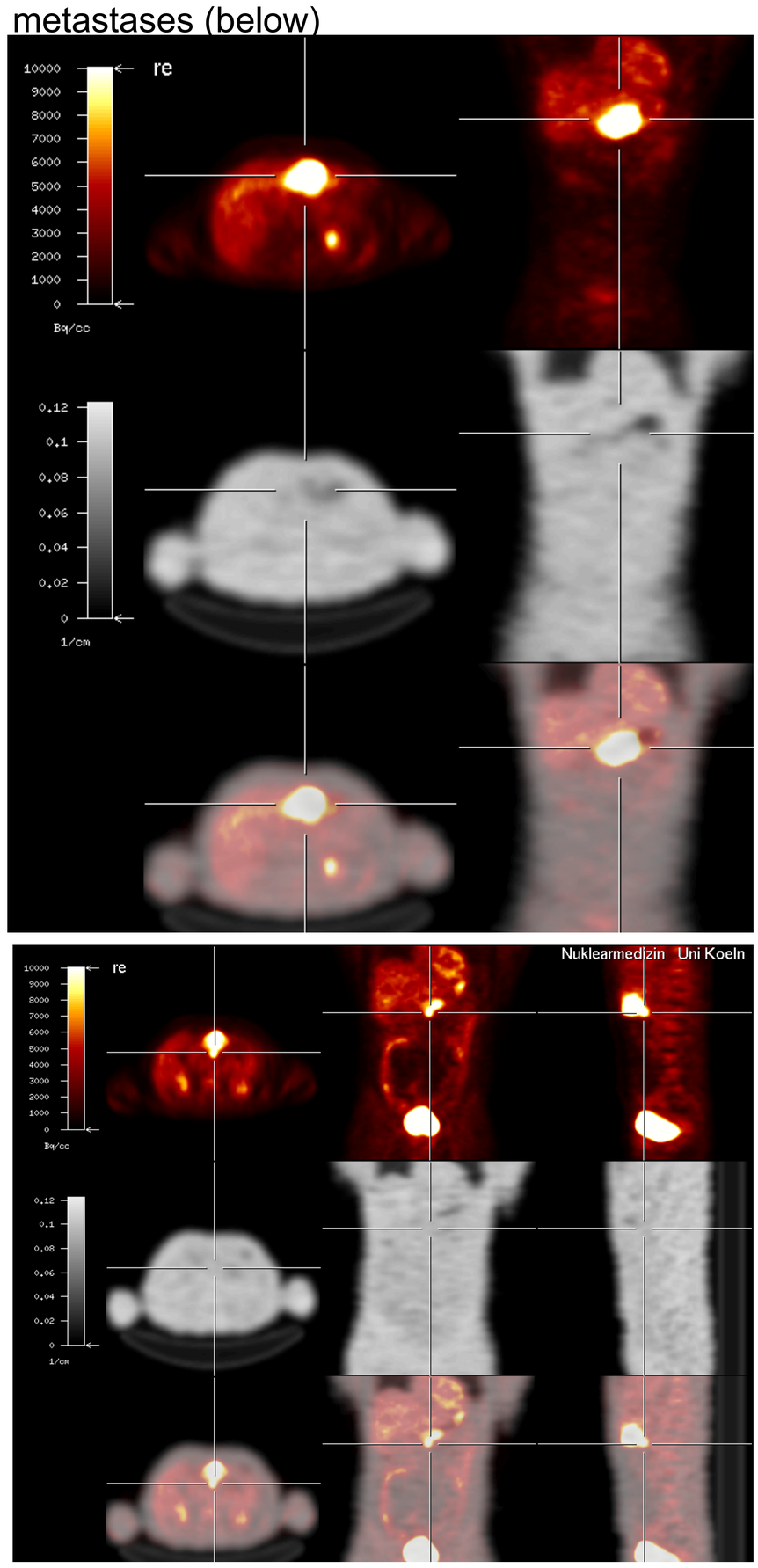
Figure 1: Female, 18 yrs, adenocarcinoma WHO pT2N1M0, Laurén diffuse type – high FDG-uptake in primary tumor (arrow)



Conclusions

The detection of the primary tumor in gastric cancer by PET scan is possible (figure 1). However, the evaluation of lymph node status using PET scan is still deficient (figure 2). A possible reason for this is the decreased FDG uptake in diffuse carcinomas as well as the over-exposure of regional lymph node metastases by the primary tumor.

Figure 2: Male, 63 yrs, signet ring cell carcinoma WHO pT3N1, Laurén diffuse type – high FDG-uptake in primary tumor (above) and in regional lymph node metastases (below)



Sources: (1) Ung YC, et al., J Natl Cancer Inst 2007, (2) Jones T, Price P, Lancet Oncol 2012, (3) Alakus H, et al., Nucl Med Commun 2010