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COULD C.E. CT/PET WITH 18F-FDG REPRESENT THE ONLY EXAMINATION IN RECTUM ADENOCARCINOMA STAGING?

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BACKGROUND-AIM

In this study, we aimed to evaluate the role of 18F-FDG PET/CT in preoperative staging of rectal carcinoma and compared it to the conventional imaging techniques (CI).

METHODS

Two PET centers with a total of 4 PET/CT scanners collaborated for this study. 141 patients with diagnosis of rectal adenocarcinoma underwent a 18F-FDG-PET/CT from october 2006 to november 2014. At staging, PET findings were compared with results of CI (US, c.e.CT, MRI). All the included patients underwent different treatment protocols and then were re-evaluated with US, c.e. CT, MRI and PET/CT (in 30 cases). PET/CT and CI findings were compared and, when possible, confirmed with histology or a second examination executed after the treatment.

RESULTS

T staging: PET showed abnormal uptake of radiotracer at the primary tumor site in all the 141 patients. The SUVmax was evaluated in all the patients and used for the prognosis and to evaluate treatment response in patients switched to chemio-radiotherapy. About local disease extension PET didn't add further informations compared to CI.
N staging: in 92/141 cases we found correlation between PET and CI: 47/92 cases with evidence of lymph node metastases (N+) and 45/92 without evidence of lymph node metastases (N-). In the remaining 49 cases PET and CI were discordant: in 38/49 PET did not identify small mesorectal lymph nodes (38/49); in 11 cases showed some pelvic unexpected lymph node metastases (3/11 were also histologically confirmed).
M staging: in 106/141 patients (75%) we found correlation between PET and CI, with the same final stage of disease: in 46/106 patients without evidence of distant metastases (M-); in 60/106 with evidence of distant metastases (liver, lung, skeletal, peritoneal, adrenal). In the remaining 35/141 patients (25%) there was discordance between PET and CI in the M stage: in 9/35 cases PET identified unexpected metastases (3 skeletal and 6 liver and/or lung; out of these we had 1 have case of false positive in the lung). In the remaining 26/35 patients PET excluded distant metastases to the liver, spleen and lung (out of these we had 3 lung false negative findings and 2 liver false negative findings).
Finally, PET identified 7 cases of synchronous unexpected neoplasia (5 at the level of the colon, 1 gastric and 1 thymoma).
So PET showed high FN rate in the locoregional lymph nodes staging due to the spatial resolution limits; CT showed high FP rate in the liver and lung evaluation. Contrast enhancement CT, US and/or MRI improve the T staging.

CONCLUSION

Considering the different and complemetary informations derived from PET and CI, the use of both techniques should be recommended in rectal cancer staging. The execution of contrast enhancement CT during PET/CT study could allow all necessary information to stage this disease.