

NODULI POLMONARI IN PAZIENTI PEDIATRICI AFFETTI DA OSTEOSARCOMA E SARCOMA DI EWING: CARATTERIZZAZIONE MEDIANTE (18F)-FDG-PET/CT

LUNG NODULES IN PAEDIATRIC OSTEOSARCOMA AND EWING'S SARCOMA: CHARACTERIZATION BY MEAN (18F)-FDG-PET/CT

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Osteosarcoma and Ewing's sarcoma are typical children and adolescent malignant bone tumours, with a peak between the ages of 15 and 25 years. The introduction of chemotherapy combined with surgery has increased survival from 10-20% to 60-70%. The lung is often the first site of metastatic spread and it's the most frequent site of metastases. The finding of metastatic pulmonary nodules on chest CT is considered a sign of poor prognosis. Early diagnosis of such lesions may dramatically increase the survival of patients after appropriate treatment: thoracic surgery and/or chemotherapy. In cancer patients, pulmonary metastases enter in differential diagnosis with all types of nodular opacity. The specificity of CT in evaluating the nature of a pulmonary nodule, especially when small, is still limited and only biopsy or nodule excision is able to reveal the benign or malignant nature. The evolution of the radiologic finding can only guide the diagnosis between benign or malignant nodular opacities.

Aim of this prospective study was to evaluate (18F)-FDG-PET/CT for non invasive characterization of pulmonary nodules in paediatric patients affected by osteosarcoma or Ewing's sarcoma.

Materials and methods: 13 patients with osteosarcoma (10 female, 3 male) and 17 with Ewing's sarcoma (5 female and 12 male) were investigated by means of whole-body ^{18F}FDG-PET/CT fusion imaging for characterization of pulmonary lesions. The age ranged from 8 to 20 years. The PET/CT results are correlated with histologic findings.

Results: ^{18F}FDG-PET/CT correctly identified pulmonary metastases in 8 patients with osteosarcoma and in 5 patients with Ewing's sarcoma. The PET/CT scan was true negative in 3 patients of osteosarcoma group and true negative in 5 patients of Ewing's sarcoma group. There were no false positive in either of the two groups. No false negative were in Ewing's sarcoma group. 2 patients of osteosarcoma group, ^{18F}FDG-PET/CT did not correctly identify pulmonary metastatic disease. In the first case the PET/CT finding was reported like inflammatory forms. In the second patient PET/CT scan was performed during chemotherapy treatment. The false negative result may be explained with the cellular stunning.

Conclusion: Correct diagnosis of a pulmonary opacity is fundamental for the prognosis and the choice of treatment in a patient with a doubtful lung lesion. Septic or other benign nodules can be undiffered from metastatic nodules by CT. Our preliminary study suggest the feasibility of a correct characterization, by (18F)-FDG-PET/CT, of lung lesions, in paediatric patient with osteosarcoma or Ewing's sarcoma. The (18F)-FDG-PET are potentially useful clinical indication in this patients. Therefore, prospective studies are needed to evaluate and establish the benefit of FDG-PET scan for the non invasive evaluation in this context.