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[18F]-FDG PET/CT AND INFECTION SITES DETECTION

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BACKGROUND-AIM

Bone infection and inflammatory processes still represent a common condition in clinical practice. Frequently an early and accurate diagnosis is very challenging. Clinical and laboratory tests are nonspecific and therefore, several imaging modalities are used to detect the site of infection.

Morphological imaging modalities (X-ray, computed tomography-CT and magnetic resonance imaging-MRI) are frequently used in patients with bone infection; however, these methods may be non-specific in early stages. 18F-fluoro-d-deoxyglucose positron emission tomography ([18F]-FDG PET/TC) has become a promising imaging modality in the field of infection; it appears to be helpful especially when MRI cannot be performed or is non-diagnostic, and as a third level exam in patients with an inconclusive diagnostic flow chart.

To collect data and evaluate the sensitivity, specificity and diagnostic accuracy of PET /CT with [18F]-FDG in a patient population, with suspect of spondylodiscitis or hip prosthesis infection. Secondary aim was to assess the role of this technique by comparing its performance with conventional imaging, histopathology and cultural exams.

METHODS

We retrospectively enrolled 59 patients (33M, 26F); 12 with suspect hip prosthesis infection and 47 with suspect spondylodiscitis.

[18F]-FDG PET/CT was performed in all patients with a 16 slices PET/CT tomograph (GE, discovery, STE) according to standard procedure.

RESULTS

Clinical follow-up, histopathology and cell culture are considered as Standard of Reference. [18F]-FDG PET/CT sensitivity was 100%. Specificity was 86% in spondylodiscitis.

Specificity and accuracy were respectively 80% and 83% in hip prosthesis infection.

CONCLUSION

Thanks to its intrinsic properties of [18F]-FDG PET/CT, provides a significant improvement in image quality with respect to conventional nuclear medicine studies. The additional information about the anatomical changes of the bone involved in the infection; play a very important role in the localization of the site of infection and allow to obtain qualitative informations for a possible surgical treatment of bone.

The results obtained suggest one should consider this imaging method in the routine diagnostic work up of patients affected by bone infection.

[18F]-FDG PET/CT could also play an important role in assessing the patient prognosis and the response to antibiotic therapy.

In addition the execution of this exam is very convenient for the patient in terms of saving and cost-efficacy.