Interesting images

Role of $^{18}$F-FDG PET-CT in the study of sacrococcygeal chordoma

Papel de la $^{18}$F-FDG PET-TC en el estudio del cordoma sacrocoxígeo

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Chordomas are frequent malignant bone tumors which have a greater predisposition in males in the 5th–7th decades of life. These tumors arise from remnants of the primitive notochord, being of slow growth (months or years) and most often presenting at the sacrococcygeal level. In the present case the tumor extended toward the anterior side of the pelvis and the soft tissue in the posterior side. Clinical manifestations include pain, constipation and progressive deterioration of neurological function, among others.

Fig. 1. Axial, sagittal and coronal slices of $^{18}$F-FDG PET and PET-CT showing moderate pathological uptake (SUVmax 4.5) and heterogeneous distribution, coinciding with the mass localized in the midline of the inferior third of the sacrum and coccyx, with involvement of soft tissue and the anterior intrapelvic region (rectum and bladder in the anterior presacral extension).


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The treatment is generally surgical. On some instances complete resection is impossible due to infiltration of adjacent structures and with the appearance of recurrence. High dose radiotherapy may be used as palliative therapy, obtaining tumor remission, while chemotherapy is of little utility.\cite{1,2}

Despite being malignant tumors, chordomas rarely metastasize and generally in late stages. The most frequent are pulmonary, hepatic, locoregional and distant lymph nodes, bone, cerebral and skin metastases.\cite{1,3} The 10-year estimated survival is of 35%.\cite{2}

We present the case of a 35-year-old male referred to the Department of Nuclear Medicine for the presentation of a sacrococcygeal mass with high suspicion of chordoma for initial staging by $^{18}$F-FDG PET-CT. In this study moderate pathological uptake ($\text{SUV}_{\text{max}}$ 4.5) was observed coinciding with the localized mass in the midline of the inferior third of the sacrum and coccyx (Fig. 1), with growth and compression of the gluteus maximus reflecting toward the periphery (Fig. 2).

Right cortical hypometabolism was incidentally observed with marked bilateral ventricular enlargement of right predominance with thickening of the right subarachnoid space and cortical atrophy in relation to an arachnoid cyst (Fig. 3). In addition, diffuse, homogeneous uptake of the thyroid was seen in relation to known hypothyroidism of the patient who was receiving treatment with euthyrox (levothyroxine sodium). No other pathological findings of note were found in the remainder of the study. The diagnosis of suspicion of chordoma was later confirmed by posterior percutaneous fine needle aspiration biopsy.

This type of patient is generally initially studied by CT and/or MR. The main advantage of $^{18}$F-FDG PET-CT compared to these imaging techniques is that it may obtain morphological and functional images of the whole body in a single study, which is of great importance since metastasis may be found in almost any organ of the body.\cite{3} Despite the advantages of this technique over other diagnostic imaging methods, few cases in the literature have reported the use of $^{18}$F-FDG PET-CT in the management of chordomas.\cite{3}
Fig. 3. Axial slices of $^{18}$F-FDG PET-CT showing the incidental observation of right cortical hypometabolism located on an accumulation of spinal fluid in the arachnoid and pia mater in the CT, connecting with the ventricular system, being extraaxial in the right cerebral hemisphere and well delimited and in relation to an arachnoid cyst.

References

