Interesting image

Malignant ovarian Brenner tumor. A case report evaluated with $^{18}$F-FDG PET/CT

Tumor de Brenner maligno. Caso clínico evaluado con $^{18}$F-FDG PET/TC

L.M. Mena, E. Carmona, F.R. Maza, M.V. Guiote, E. Moreno, J.A. Vallejo

UGC de Medicina Nuclear, IMIBIC, Hospital Reina Sofia, Universidad de Córdoba, Spain

We present a case of a 59-year-old woman with clinical symptoms of a pelvic mass. She underwent an abdominal computed tomography (CT) scanning which demonstrated adnexal mass with solid and cystic components. The biopsy confirmed a malignant Brenner tumor. Then, a $^{18}$F-FDG PET/CT study was performed for disease staging and showed a high FDG uptake with heterogeneous distribution in solid component of the mass (Fig. 1) and FDG-avid lymphadenopathy in multiple locations above and below the diaphragm, as well as multiple focal FDG uptake in bones and mild FDG-avid in pulmonary nodules (Fig. 2). This leads to staging the tumor as stage IV.

Brenner tumors are relatively uncommon tumors accounting for 1.5% of all ovarian tumors. They may be of benign, borderline or malignant nature (only 1% in these cases) and may be seen at any age. It is believed that these tumors originate from the coelomic epithelium of the ovary and the epithelial component consists of nets of transitional cells similar to those observed in the urothelium.1

Typically, benign Brenner tumors are unilateral while malignant tumors are often bilateral and consist of a mixture of solid and cystic tissue and the cystic component predominates.2

The microscopy findings in the benign tumor showed bundles of tightly packed stromal cells enclosing solid islands of epithelial cell nests and longitudinal grooving, and in the malignant tumor showing multi-layered atypical transitional cell epithelium, classic nuclear grooving and abundant mitosis along with evidence of invasion,2 that is indicative of high uptake of FDG.

Brenner tumors are mainly asymptomatic and are usually discovered incidentally, they sometimes cause symptoms such as a palpable mass or pain. Malignant forms of the tumor are rarely detected and arise mostly during the perimenopausal and postmenopausal periods.

Fig. 1. Fused transaxial (A) and coronal (B) PET/CT images show a large adnexal mass that extend into the upper abdomen with a heterogeneous uptake of $^{18}$F-FDG in the solid component. The maximum standardized uptake value (SUV$_{max}$) was 9.6.

* Corresponding author.
E-mail address: lmmeba@hotmail.com (L.M. Mena).

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80% of malignant Brenner tumors are confined to the ovary (stage I) at the time of diagnosis with an excellent prognosis and with a 88% survival at five years. Cases with extraovarian dissemination behave in a similar manner to the other ovarian carcinomas, although it has been reported that the prognosis is better than transitional cell carcinomas.2

The treatment for malignant Brenner tumors is essentially surgical. The surgical procedure has to be extended as in other epithelial ovarian malignancies, particularly including omentectomy and removal of retroperitoneal lymph nodes.

The spread pattern of the malignant Brenner tumor is usually regional with only occasional distant metastases, and our case shows this exception.

In the epithelial ovarian cancer, 18F-FDG PET/CT has a role in the detection of recurrent ovarian cancer and has been demonstrated to accurately predict response to treatment. Recently, the introduction of PET/CT in the preoperative management of epithelial ovarian cancer has led to an increase in the detection of extra-abdominal metastases and better staging of the disease.2

This case shows that 18F-FDG PET/CT is appropriate in the evaluation of malignant Brenner tumor staging and has not been previously described in the literature.

References