Oncology

Renal teratoma: Literature review and case report

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ABSTRACT

The teratomas are derived neoplasms of totipotent embryonic cells and are extremely rare. We reported a Renal tumor on the right in a 36 years old patient, incidentally detected by imaging exams as a large and complex cystic lesion. Radical nephrectomy was performed with histopathological diagnosis of mature teratoma.

Introduction

Dermoid cyst is classified as one type of well-differentiated mature cystic teratoma, replicating the structure of skin in an organ. They often occur in the gonadal tissue and along the midline of the body. However, the inferior mediastinum, retroperitoneum, sacrococcygeal region, brain a and gastrointestinal tract can be affected less frequently. The migration capacity of the germ cells provides a plausible explanation for the occurrence of teratoma in several anatomical site.1-4

Renal teratomas are extremely rare. The incidence is higher in children and females.4

The main signs and symptoms are: palpable abdominal mass, abdominal pain, anorexia, nausea, vomiting and hematuria. Sometimes they are detected incidentally by imaging exams.2

Abdominal ultrasound is the method of choice for initial assessment. The echographic patterns can be characterized by cystic, heterogeneous or mixed content and gross foci of calcification.2,3

Abdominal tomography describes the lesion as a heterogeneous, well defined mass, occasionally with cystic areas, foci of calcification and necrosis. In addition, it can clearly show various components of tumor tissue such as fat, calcifications and cysts.1-3

In general, macroscopically, they are large and well-circumscribed lesions. They are identical to their much more common ovarian counterparts grossly forming a cyst that contains keratinous material and sometimes hair. Typically, a cyst is lined by stratified squamous epithelium with pilosebaceous units and sweat glands in a collagenous stroma similar to dermis.1-3

We presented a literature review and the evolution of a clinical case with its main radiological and histopathological characteristics, as well as the therapeutic option at the time of diagnosis.

Case presentation

A male patient, 36, asymptomatic who sought medical care for urologic evaluation after performing abdominal ultrasound. Imaging exams incidentally showed a complex cystic kidney lesion on the right.

The ultrasound of the abdomen showed solid nodule measuring 5.3 × 3.2 × 3.3 cm, hyperechoic, within precise limits, lobulated, homogeneous. The contrast-enhanced abdomen tomography presented a cystic multi-septal nodular lesion with thickened walls showing enhancement after the injection of the contrast medium, measuring 5.6 × 6.6 × 5.5 cm located at the upper pole, crossing the partially exophytic interpolar line (>50%) and in proximity to the collecting system (<4mm) classified as Bosniak IV (Fig. 1).

The therapeutic option in the preoperative period was laparoscopic partial nephrectomy with complete excision of kidney injury. Despite being a large lesion, there were other characteristics favor the proposed treatment, among them: predominantly exophytic, without compromising the collecting system, located anteriorly and in the upper pole.

During the surgery, the plan of dissection between the cystic lesion

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and the renal parenchyma was not clear, increasing the risk of a positive margin and violation of the cystic lesion. This would decrease the oncological safety of the procedure, so laparoscopic radical nephrectomy was chosen.

At grossing evaluation, the lesion measured 5 cm in the longest axis and exhibited rough and brownish walls. On cuts, he observed, a multiloculated lesion was observed, with smooth walls and a thick yellowish discharge. No involvement of the collecting system was observed.

At microscopy, a mature renal teratoma was diagnosed based on the observation of a cystic cavity lined internally either by transitional type epithelium or by keratinizing squamous type epithelium without atypia and with skin appendages (Fig. 2). It’s content was represented by orthokeratin lamellae and cellular debris (Fig. 3). Absence of immature or atypical tissues. There were no other endodermal or ectodermal elements.

Discussion

Renal teratomas are rare, with few cases published in the literature, and 30 cases have been described so far. For a tumor to be considered renal teratoma, Beckwith suggested that at least two criteria must be present: first, the neoplasm must be unequivocally of renal origin. For
this, the entire lesion must be inside the renal capsule and the hypothesis of metastasis must be ruled out; second, the tumor must have elements from other germinal leaflets that clearly try to form other organs.\(^5\)

In the present case, the tumor was unequivocally of renal origin and contains squamous epithelium with attachments forming the skin. Teratomas can be benign or malignant transformation from benign teratoma. Therefore, complete excision of the lesion is necessary.\(^3\)

The diagnosis of renal teratoma is very difficult before surgery and depends on the anatomicopathological result. Small round and blue cell tumor including teratoid Wilms’, metanephric adenoma, lymphoma, peripheral neuroectodermal tumor and rhabdomyosarcoma are possible and the correct histological diagnoses is crucial for the treatment and prognosis.\(^4,5\)

Nephrectomy with complete excision of teratoma is the treatment of choice, as it is effective in controlling the disease and providing good disease-free survival rates to patients.\(^3\) Surgical treatment can be challenging in situations of massive injuries, with involvement of adjacent organ or vital organs.

**Conclusion**

Patient in question was diagnosed preoperatively with a cystic lesion, Bosniak IV, and the hypothesis of renal teratoma was not considered. This diagnosis is rare and difficult to make before specimen evaluation. It should be considered in the differential diagnosis of any renal mass in children and adults, must be distinguished from other entities to correct choice of treatment.

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**Declaration of competing interest**

None.

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