Primary Mature Cystic Teratoma Mimicking an Adrenal Mass in an Adult Male Patient

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Teratomas are bizarre neoplasms derived from embryonic tissues that are typically found only in the gonadal and sacrococcygeal regions of adults. Primary retroperitoneal teratomas are rare and present challenging management options. We report a case of a unilateral primary retroperitoneal mature cystic teratoma mimicking an adrenal mass in a 54-year-old male patient. Complete resection of the adrenal mass was performed by the flank approach by using the 11th rib resection. Because of the risk of malignancy, follow-up radiographic studies were performed to ensure the oncologic efficacy of resection. The patient has been free of recurrence for longer than 12 months.

Keywords: Adrenal neoplasm; Cystic teratoma

INTRODUCTION

Primary retroperitoneal teratomas are very rare in adults. They typically occur in this location only in infancy and childhood. Teratomas are tumors that are derived from embryonal tissue and are composed of somatic cell types from two or more germ layers (ectoderm, mesoderm, or endoderm) [1]. A teratoma is considered to be a nonseminomatous germ cell tumor and is typically located in either the sacrococcygeal region or the gonads. Most teratomas in this region (retroperitoneal) are secondary to germ cell tumors of the testes or ovaries. Specifically, in male patients, retroperitoneal germ cell tumors are more likely to have metastasized from the testes than to present as primary tumors [2]. Computed tomography (CT) is very useful for the differential diagnosis of this rare tumor. Here we report a case of unilateral primary mature cystic teratoma of the retroperitoneum mimicking an adrenal mass in an adult male patient.

CASE REPORT

A 54-year-old previously healthy male patient developed acute, left upper quadrant abdominal and left flank pain. This pain lasted several hours and then resolved spontaneously. When he was admitted to the hospital, on ultrasound and an abdominal and pelvic CT scan, he was found to have an 8-cm×7-cm×6-cm solid and cystic mass in the left (surrenal area) retroperitoneum containing bone and multiple soft tissue densities (Fig. 1). The tumor had calcification and was not well enhanced. There was no evidence of distant metastasis. The tumor was also examined by magnetic resonance imaging (MRI). We also diagnosed that the tumor originated in the left adrenal gland, because the normal adrenal gland could not be recognized by CT or MRI. The patient had hypertension for which he was taking amlopidine 5 mg daily. However, plasma levels of catecholamines, rennin, aldosterone, adrenocorticotropic hormone, and cortisol were within the normal range. Tumor markers, such as serum alpha-fetoprotein, lactate dehydrogenase, carcinoma antigen 125, neuron-specific enolase, and carbohydrate antigen 19-9, were examined because it was possible that the tumor did not originate from the adrenal gland.

The patient underwent resection of the lesion through a flank incision by 11th rib resection. The retroperitoneal dissection was tedious and difficult, but the mass was excised in its entirety (Fig. 2). The left adrenal gland was normal. The resected retroperitoneal cystic mass measured 8 cm×7 cm×6 cm and weighed 153 g (Fig. 2). The final
Primary Mature Teratoma Mimicking as Adrenal Mass

**FIG. 1.** (A) Abdominal computed tomography demonstrating a left retroperitoneal (surrenal area) mass with solid and cystic components, as well as large and heterogeneous calcifications. (B) Magnetic resonance imaging demonstrating a left retroperitoneal mass with solid and cystic components, as well as large and heterogeneous calcifications.

**FIG. 2.** (A) Left retroperitoneal (surrenal area) cystic mass after flank incision. (B) Gross photograph of the cystic mass.
pathological evaluation of the tumor was a mature ter-
atomas without malignant components. Macroscopically,
the specimen was a 6 cm ×5 cm ×4 cm fluctuating mass. On
incision, cystic material came off and a thinly walled cyst
was left. The cyst wall thickness was approximately 1 mm
with only some minor excrescents. Histologically, the cyst-
ic cavity was lined by ciliated columnar cells (Fig. 3) and
the excrescents were hyalin cartilage islands under this ep-
thelium with some lobules of seromucinous glands (Fig.
3). No immature elements were seen and the diagnosis was
a mature cystic teratoma pathologically. Because these tu-
mors usually represent metastasis from other primary
sites, additional imaging with CT of the chest and scrotal
ultrasonography was performed. No other primary tumor
was identified. Therefore, we diagnosed the mass as a pri-
mary retroperitoneal teratoma. After 12 months of fol-
low-up, the patient was free of recurrence.

DISCUSSION

Teratomas are rare congenital neoplasms that develop
from more than one and usually all three of the primordial
germ cells, which differentiate to form ectodermal, meso-
dermal, and endodermal tissue elements. During the
fourth week of embryologic development, germ cells origi-
nating from the yolk sac migrate in the midline of the fetus
along the dorsal mesentery from the urogenital ridge to the
developing gonads. Some of the cells do not complete the
migration and survive in midline locations such as the
pineal gland, anterior mediastinum, retroperitoneum, and
sacroccocygeal area, where they differentiate into extra-
gonadal teratomas [2,3]. Teratomas are classified as one
of four variants: (1) mature, when they contain adult or dif-
ferentiated tissue; (2) immature, when they comprise pre-
dominantly embryonic or undifferentiated tissue; (3) ter-
atoma with malignant transformation; and (4) mono-
dermal, when there is a predominance of tissue arising
from one germ cell layer. Mature teratomas occur most of-
ten in the ovaries and testes. Extragonadal sites account
for 15% of all teratomas, and the retroperitoneum is the
least common location [4].

The diagnosis of a retroperitoneal teratoma can often be
made on the basis of radiologic imaging. Retroperitoneal
teratomas can be predominantly cystic or completely solid
in appearance. A CT scan or MRI can identify various com-
ponents of these tumors, including bone, soft-tissue den-
sity structures, adipose tissue, and sebaceous and se-
rous-type fluids. These imaging studies can also display
the precise location, morphology, and adjacent structures
of the tumor, which provide better preoperative planning
and increased likelihood of complete removal of the tumor
with less iatrogenic damage [5].

A primary retroperitoneal mature cystic teratoma in a
54-year-old man is a rare phenomenon. Most retro-
peritoneal teratomas in adults represent metastases from
a primary gonadal tumor [6]. Our patient had a retro-
peritoneal mature cystic teratoma that was not derived
from any specific organ. Radiographic evaluation did not
confirm the origin or the nature of the retroperitoneal
mass.

Germ cell tumors in the retroperitoneum usually occur
in pediatric populations [7]. Retroperitoneal mature cystic
teratomas are characterized by a bimodal peak in in-
cidence, occurring in the first 6 months of life and in early
adulthood [2]. Primary retroperitoneal teratomas in adults
are uncommon, with only 32 cases reported between 1937
and 1987 [2]. In adults, documented cases of retroperitoneal teratomas are often secondary sites of tumor genesis. Primary tumors metastasizing to this region have been identified in the breasts, lungs, and gonads. Specifically, in male patients, retroperitoneal germ cell tumors are more likely to have metastasized from the testes than to present as primary tumors [2]. Primary retroperitoneal teratomas in adults are usually found in the upper portion of the left kidney [2]. In the case of a retroperitoneal tumor, germ cell tumors should be considered and tumor markers examined before surgery [8]. The malignancy rate of 25.8% in adults is significantly higher than the 6.8% rate documented in children [2]. Regardless of the benign histological nature of mature teratomas, close follow-up is recommended because the incidence of malignant transformation is approximately 3% to 6%. In the present case, the patient was free of recurrence after 12 months of follow-up.

In conclusion, primary retroperitoneal teratoma is a rare entity in adults. Although usually asymptomatic, large neoplasms can cause abdominal and flank pain. Preoperatively, the diagnosis can be established by its characteristic appearance on CT. Although retroperitoneal teratomas can be radiologically recognized, it is important to note that masses in the suprarenal region are likely to be confused with suprarenal masses, as in our case. The definitive primary treatment of retroperitoneal teratomas is surgical resection.

CONFLICTS OF INTEREST
The authors have nothing to disclose.

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