Case Report

Primary Retroperitoneal Teratoma in an Adult

Primary retroperitoneal teratoma is a rare entity in adults. It has a distinctive imaging appearance. We describe the case of a 26-year-old man who was referred to our hospital due to an abdominal tumor. Serial work-up disclosed a teratoma at the retroperitoneum. Laparotomy with tumor resection was performed. Pathological examination revealed a mature cystic teratoma. The postoperative course was smooth. This patient was doing well at one-year follow-up.

CASE REPORT

A 26-year-old man suffered from abdominal fullness for 1 month. No pain, body weight loss, bowel or urinary symptoms were associated with his condition. He visited a local hospital for first aid and a huge abdominal tumor was found. Then he was referred to our hospital and admitted for further evaluation and management. Tracing his history, he had no major systemic disease except for an operation for a left inguinal hernia at childhood. The patient had habits of both smoking and alcohol drinking.

The positive physical findings included a mass palpable about 20 × 10 cm in the epigastric area extending to the right lower quadrant (RLQ). His testes were normal with no mass. Routine blood tests and urinalysis were all within normal limits. The serum levels of tumor markers alpha-fetoprotein (AFP) and carcino-embryonic antigen (CEA) were both normal.


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Key Words
retroperitoneal neoplasms;
retroperitoneal space;
teratoma
Plain abdominal film showed a mass density in the upper abdomen and right pelvis with calcification and displacement of the bowel loops (Fig. 1). Sonography demonstrated a large cystic tumor with an eccentric solid protrusion and finely textured echoes within the fluid (Fig. 2). This tumor occupied the upper abdomen and RLQ with displacement of the liver and pancreas upward. There was no ascites or splenomegaly. Abdominal computed tomography (CT) revealed a cystic tumor with multiple tissue elements and 15×14 cm in size located at the lesser sac and extending downward to the right pelvis and upward to the portal hepatitis, with displacement of the duodenum and pancreas. There was no definite lymphadenopathy (Fig. 3). Abdominal angiography was performed and confirmed a huge mass feeding mainly from branches of the gastroduodenal artery. Stretching and displacement of the superior mesenteric artery and vein were also noted. Exploratory laparotomy revealed a large cystic mass behind the ascending colon, duodenum, and pancreas. It was located in the retroperitoneal compartment and extended from the pelvis to the portal hepatitis. The entire tumor was excised. Macroscopically, the encapsulated mass measured 22×20×10 cm and...
weighed 1700 gm. It was filled with greasy materials and hairs. The solid components were composed of fat, bone, skin and teeth. Microscopically, it presented a cystic tumor comprising squamous epithelium, skin adnexa, bone, marrow tissue, ciliated columnar epithelium, fat, nerve and soft tissue with foreign body granuloma. No immature component was identified. It was compatible with the diagnosis of mature cystic teratoma (Fig. 4). The postoperative course was uneventful and he was well at the one-year follow-up.

DISCUSSION

Retroperitoneal teratomas are rare and constitute less than 10% of all primary retroperitoneal tumors. They usually occur more in children than in adults. Approximately half of the patients are found in the first decade of life. Less than 20% of these patients develop tumors over the age of 30 years. The incidence of retroperitoneal teratoma in females is twice that in males. In Taiwan, similar cases of adult onset retroperitoneal teratoma have been published before. Teratomas arise from germ cells that fail to mature normally in the gonadal locations. These totipotent cells can differentiate into tissue components representing derivatives of mesoderm, ectoderm and endoderm. The distribution of teratomas are described in order of decreasing frequency, in the ovaries, the testes, the anterior mediastinum, the retroperitoneal space, the presacral and coccygeal areas, the pelvis and other intracranial sites, the neck and abdominal viscera other than the gonads. The migratory property of germ cells would explain teratomas in these extragonadal sites, which generally occur along midline structures. Retroperitoneal teratomas are often located near the upper pole of the kidney, with a preponderance on the left side.

Retroperitoneal teratomas are usually asymptomatic. When compression of the surrounding structures occurs, patients may have abdominal distention and pain, nausea and vomiting. Malignant teratomas tend to progress rapidly. Malignant change of teratoma was higher in adults than in children, with incidences of 26% and 10%, respectively. Malignant teratomas may cause a rise in serum AFP. The differential diagnosis of retroperitoneal teratomas includes ovarian tumors, renal cysts, adrenal tumors, retroperitoneal fibromas, sarcomas, hemangiomas, xantogranuloma, and enlarged lymph nodes and perirenal abscess.

Plain abdominal films always show a tissue mass and calcification. Calcification may be within the tumor or on the rim of the cyst wall. They appear in 53%-62% of
teratoma cases and are useful for the preoperative diagnosis.\textsuperscript{2,3,7} Even though 74\% of benign teratomas contain calcium, they also occur in 25\% of malignant teratomas. Sonography can identify the cystic, solid or complex components of the tumor. The acoustic shadow induced by calcification in the teratoma and occasionally a fat-fluid level are described.\textsuperscript{10} The cystic portion may contain sebaceous, non-fat fluid and struc-tures resembling fetal parts. Fluid may fill the dependent portion of the tumor producing a fat-fluid in the face with the sebum. Sonography does not permit definite differentiation among the fat, other forms of soft tissue and calcification deposits.\textsuperscript{10} CT gives more specific in formation on the fat, proteinaceous fluid and calcium content. The presence of fatty portions of tumors in the retroperitoneal space suggests malignancy.\textsuperscript{10} CT is better than sonography in delineating the teratoma extent to the surrounding organs and in evaluating the cyst wall.\textsuperscript{10} Magnetic resonance imaging is unable to show calcification, but it can distinguish fluid, fat, calcium and soft tissue elements, then predict respectability and evaluate recurrence.\textsuperscript{13} Angiography can depict the blood supply and the presence of hypervascularity, art erial invasion and organ involvement suggesting malignancy.\textsuperscript{14} Macroscopically, teratomas can be divided into either cystic or solid. Cystic teratomas are mostly benign, containing sebaceous materials and tumors that contain soft tissue types. On the other hand, solid teratomas are usually malignant and composed of immobile elements in the abdomen. The prognosis is excellent for benign retroperitoneal teratoma if complete resection can be accomplished.\textsuperscript{1} Conversely, malignant teratomas usually recur despite surgical intervention, with a median survival of 18 months.\textsuperscript{7}

In conclusion, retroperitoneal teratomas are rare and difficult to diagnose because of non-specific signs and symptoms. The diagnosis of teratoma has been determined by the presence of fat within a mass and by focus of calcification on imaging study. Once the diagnosis is made, surgical management is necessary.

REFERENCES