An omental teratoma in a young girl

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Abstract

Teratoma is the most commonly encountered germ cell tumour among the most common ovarian tumours; however, teratomas of the omentum and mesentery are extremely rare. They are usually asymptomatic or can produce compressive symptoms. The imaging features are suggestive. The present report describes such a case of primary omental teratoma encountered in a young patient, which was managed by surgical resection. The histopathological examination confirmed the diagnosis of mature cystic teratoma. Germ cell tumors are congenital tumors containing derivatives of all the three germinal layers, frequently seen in gonads. But their occurrence in extragonadal sites, such as omental teratoma, is relatively rare.

Introduction

Germ cell tumors are congenital tumors frequently seen in gonads, containing derivatives of all the three germinal layers. Teratoma is the most commonly encountered germ cell tumor among the ovarian tumors. However, teratomas of the omentum and mesentery are extremely rare.1 The first omental dermoid cyst was described by Lebert in 1734.2 To date, only 29 cases of teratoma of the omentum have been published. The occurrence of teratoma in males is less common than in females.3,4 The present report describes such a case of primary omental teratoma encountered in a young patient which was managed by surgical resection.

Case Report

A 9-year old girl presented with a dull aching, huge lump in the right flank which had been noticed by her mother three months before. General physical examination and systemic examination was unremarkable. On abdominal examination, a large, non-tender lump measuring 20×16 cm on the right side involving almost half of abdomen with a nodular surface, cystic consistency, felt mobile, and was free from intraperitoneal visceral and abdominal wall. There was no associated hepatomegaly or ascites. The hematologic, coagulation, biochemical parameters, including tumor marker tests, revealed no elevation of cancer antigen (CA125, CA19–9, carcinoembryonic antigen and alpha-fetoprotein). Plain abdominal X-ray showed a large soft-tissue mass with foci of calcification in the right lumbar region. Abdominal ultrasonography showed a 17×13×10 cm intraperitoneal mass in the right lumbar area extending into the hypochondriac, umbilical, iliac region, and pushing the kidney laterally. Contrast enhanced computed tomography (CECT) of the abdomen revealed a variable-density intraperitoneal mass with solid, cystic, and fatty components and evidence of foci of calcification in the same location, free from all the viscera with a vascular pedicle arising from internal iliac artery. The mass was pushing the kidney and the abdominal aorta laterally, the inferior vena cava anteriorly, and was seen to cross the midline (Figure 1). FNAC from the mass had shown large lenticular cells of embryonal origin suggestive of germ cell tumor.

At laparotomy, a huge intraperitoneal, boscated / nodular, highly vascular mobile lump free from surrounding tissue except vascular pedicle from omentum to which it was attached (Figure 2). The uterus was normal in size as were ovarian tubes and ovaries. After transfixation of the pedicle with other feeders, the tumor was completely excised. The tumor was fleshy and solid in places (Figure 3A). The cut section of the specimen showing pultaceous material and evidence of focal calcifications (Figure 3B). The postoperative course was uneventful. The histopathology report revealed mature cystic teratoma keratinized stratified squamous lin-

Figure 1. CECT study of abdomen reveals (A, B) a large heterogeneous moderately enhancing interperitoneal mass showing solid and cystic component with a vascular pedicle from internal iliac vessel as noted on (C) coronal reconstruction images.
ing epithelium with a variety of fat cells, collagen, muscular blood vessels and glial tissue (Figure 4A). Psamoma bodies encircling the vessel wall were suggestive of endodermal sinus tumor (Figure 4B). The patient is well at one year follow up.

**Discussion**

The migratory capacity of germ cells may account for the anatomic variety seen with these tumors, which explains the occurrence of teratoma in the gonads and the midline structures. Extragonadal teratomas are thought to arise from primordial germ cells or early embryonic cells, or from totipotential cells.2-5 Solid and cystic varieties have been identified macroscopically; the former tends to be malignant while the latter is usually benign.4 They are typically found in women of reproductive age, but may also appear in young girls and in older women. The etiology of omental teratomas is poorly understood, but three main theories have been proposed to explain their location: i) primary teratomas of the omentum may originate from displaced germ cells; ii) teratomas may develop in a supernumerary ovary of the omentum; iii) teratomas may result from autoamputation of an ovarian dermoid cyst with secondary implantation into the greater omentum.2,7

Although benign teratomas are usually asymptomatic and often diagnosed on routine investigation, as the tumor mass increases, obstructive symptoms can develop. Common presenting symptoms include back or abdominal pain, genitourinary symptoms, gastrointestinal symptoms, as well as lower extremity or genital edema secondary to lymphatic obstruction. Physical examination may detect a midline or paramedian abdominal mass with limited mobility.7 Teratomas can cause secondary infection leading to abscess formation; traumatic rupture with chemical peritonitis has been reported.8 It is difficult to establish a diagnosis preoperatively. Calcification can be demonstrable in abdominal X-rays in 61.5% of cases5,6 as in our patient. Ultrasonography demonstrates a complex echo-pattern with solid and cystic components. Computed tomogram provides better delineation of fat and calcification. Magnetic resonance imaging (MRI) allows for improved soft-tissue resolution and is useful in assessing the local extent of the disease. It can differentiate between benign and malignant tumor.3 Tumor markers such as CEA, CA19-9, and alpha-fetoprotein are expressive for retroperitoneal teratomas.3-6-7 The differential diagnosis of a cystic mesenteric mass includes duplication cysts, cystic mesothelioma, cystic lymphangioma and liposarcoma. Pathological examination must differentiate between mature and immature teratoma. Teratomas of the greater omentum are benign lesions, but malignant transformation of cystic teratomas has been described.8

Once the teratoma is detected, surgical resection is mandatory. Complete excision is curative for benign lesions. The use of laparoscopic technique in benign tumor has been reported.10 However, the malignant lesions are managed with a similar approach to their gonadal counterparts. Incomplete resections may result in recurrence. Prognosis of benign retroperitoneal teratoma is good after complete resection and recurrences have not been reported, while malignant varieties require chemo- and radiotherapy.1-5

**Conclusions**

Teratoma is the most commonly encountered germ cell tumor among the most common ovarian tumors. However, teratomas of the omentum and mesentery are extremely rare. They are usually asymptomatic or can produce compressive symptoms. The imaging features are suggestive. Complete excision is warranted to prevent recurrences and is curative for benign lesions, while malignant lesions are managed with a similar approach to their gonadal counterparts with adjuvant chemo- and radiotherapy.
References

1. Ordóñez NG, Manning JT Jr, Ayala AG. Teratoma of the omentum. Cancer 1983; 51:955-8.
2. Lazarus JA, Rosenthal AA. Synchronous dermoid cyst of great omentum and ovary. Ann Surg 1931;93:1269.
3. Schmoll HJ. Extragangadal germ cell tumors. Ann Oncol 2002;13:265-72.
4. Ratan SK, Ratan J, Kalra R. Large benign cystic teratoma of the mesosigmoid causing intestinal obstruction: Report of a case. Surg Today 2002;32:922-4.
5. Patankar T, Prasad S, Chaudhry S, Patankar Z. Benign cystic teratoma of the lesser omentum. Am J Gastroenterol 1999; 94:288.
6. McKenney JK, Heerema-McKenney A, Rouse RV. Extragangadal germ cell tumors: a review with emphasis on pathologic features, clinical prognostic variables, and differential diagnostic considerations. Adv Anat Pathol 2007;14:69-92.
7. Mumley N. Dermoid cysts of the great omentum. Am J Surg 1928;5:56.
8. Ferrero A, Céspedes M, Cantarero JM, et al. Peritonitis due to rupture of retroperitoneal teratoma: computed tomography diagnosis. Gastrointest Radiol 1990;15:251-2.
9. Taori K, Rathod J, Deshmukh A, et al. Primary extragonadal retroperitoneal teratoma in an adult. Br J Radiol 2006;79:120-2.
10. Cadeddu MO, Mamazza J, Schlachta CM, et al. Laparoscopic excision of retroperitoneal tumors: technique and review of the laparoscopic experience. Surg Laparosc Endosc Percutan Tech 2001;11:144-7.