

Case Report

Spontaneous Rupture of an Ovarian Dermoid Cyst Associated with Intra-Abdominal Chemical Peritonitis: Characteristic CT Findings and Literature Review

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A case of ruptured ovarian dermoid is documented including the characteristic CT findings of chemical peritonitis based on the fatty peritoneal fluid content similar to that found in fatty dermoids.

Keywords: Dermoid cyst, Matured teratoma, Chemical peritonitis, CT

J Med Assoc Thai 2006; 89 (4): 513-7

Full text. e-Journal: <http://www.medassocthai.org/journal>

Benign, cystic, ovarian teratoma (dermoid) is the most common ovarian neoplasm comprising between 10 and 25 percent of ovarian tumours⁽¹⁾. The dermoid (bilateral in 8-15 percent of patients) can occur at any age, but is more common during the reproductive years, especially among women under 30 years old⁽²⁾. The tumour is slow-growing and is usually an accidental finding. The tumour may cause pain, dysmenorrhea and pelvic pressure. The main complications of benign cystic teratoma are torsion (16%)⁽³⁾, malignant degeneration (2%)⁽⁴⁾, rupture (1-2%) and infection (1%)^(1,2,5).

Herein, the authors present the CT findings of a case in which a cystic teratoma ruptured into the peritoneal cavity.

Case Report

A 41-year-old, nulliparous patient presented with a 3-week history of fever. She had a low-grade fever, abdominal pain, anemia, nausea, vomiting and watery diarrhea (2 times/day) for two weeks. After being given antibiotic treatment at a provincial hospital, the diarrhea subsided, but the fever and anaemia persisted. Three days before admission to Srinagarind Hospital, she experienced increased abdominal disten-

sion so she was admitted for fever with anaemia. This sort of history at presentation is common in Northeast Thailand. Her menstruation cycle was normal and there was no history of trauma.

Roentgenographic findings

A plain, abdominal radiograph (Fig. 1) revealed a large, pelvic, soft tissue mass containing a tooth-like calcification. A sonogram revealed a right-sided, intra-abdominal echogenic, poorly-penetrated, adnexal mass. Ascites with some septation were observed.

CT scan of the whole abdomen revealed a 14-cm, right, adnexal mass with fatty fluid and calcification (Fig. 2, 5), consistent with a cystic ovarian teratoma.

The fatty-fluid level was significant, *viz.*: 1) a large collection of intra-abdominal ascites containing fatty fluid throughout the whole abdomen (Fig. 3, 5); 2) multiple fat droplets, fatty implants along the liver surface (Fig 4); and, 3) fat bubbles in the non-dependent region. Additionally, ascites and omental infiltration (Fig. 6) were noted. Thickening and increased density of the greater omentum was demonstrated. All of the findings indicated a ruptured dermoid cyst with intra-abdominal chemical peritonitis.

Surgery revealed clear, yellowish ascites with fat droplets as large as 1000 mL. Omental caking with adhesions to the anterior abdominal wall was observed.

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Fig. 1 Plain radiograph of abdomen showed a pelvic soft tissue mass (arrows) with a calcification (arrow head)



Fig. 4 CT scan through the level of liver revealed fatty implantation at the liver surface (arrow heads)



Fig. 2 Axial CT scan of pelvic cavity revealed a large right adnexal mass with fat-fluid content (arrow) and a calcification (arrow head)



Fig. 5 Coronal reformation of the abdomen again showed the pelvic mass with calcification of characteristic dermoid tumor (M) with ascites of a fat (white arrow)-fluid (black arrow) level

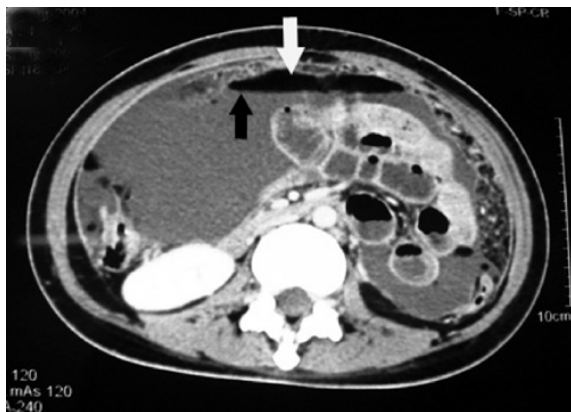


Fig. 3 Axial abdomen at the mid portion depicted the ascites that showed fat-fluid layering level (black and white arrows)



Fig. 6 Axial CT showed the thick and stranding of the omentum (arrows)

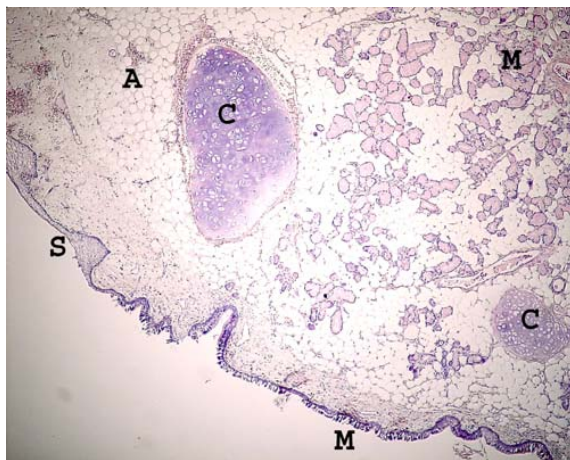


Fig. 7 Pathology revealed a 3 cell-lines tumor
 A Adipose tissue
 C Cartilage
 M Mucous gland and digestive mucosa
 R Respiratory mucosa
 S Skin

A right, adnexal mass, 14 cm, contained hair, fat and calcification with a 0.5 cm anterior wall perforation. The uterus, left tube and ovary appeared normal.

After surgery, the patient's recovery was uneventful.

Pathology (Fig. 7)

The section of the right cystic ovary showed an admixture of variable mature tissues such as skin (S), brain tissue, thyroid tissue, respiratory mucosa (R), adipose tissue (A), cartilage (C), mucous gland and digestive tract mucosa (M) with focal anterior wall perforations and chronic peritonitis, foamy macrophages and foreign body giant cells.

Discussion

Mature teratoma of the ovary comprises a cyst lined by an epidermis-like epithelium and contains a variable admixture of elements of one or more of the three cell lines; meso-, endo- and ecto-dermal derivatives including sebaceous secretions, hair, teeth, bone or fat^(3,6).

The diagnosis of a mature cystic teratoma using CT imaging is straightforward because this modality is more sensitive for fat⁽⁷⁾. Using CT, fat attenuation (sebaceous material) within a cyst, with or without calcification in the wall, is diagnostic for mature cystic teratoma^(3,8-10). A floating mass of hair can sometimes be identified at the fat-aqueous fluid

interface^(8,9). Fat is reported in 93% of cases and teeth or other calcifications in 56%⁽¹⁰⁾.

In the presented patient, an axial and coronal contrast, material-enhanced CT scan of the cyst cavity demonstrated fat attenuation. A round, Rokitansky nodule was seen and had a feathery appearance at the fatty interface, where hair arose from it and calcification was seen.

Despite the benign nature of these neoplasms, they have generated considerable interest because of their unusual presentation. Moreover, rupture or perforation of the cysts may give rise to peritonitis. However, spontaneous rupture of an ovarian dermoid cyst is rare, occurring in < 1% of cases^(8,10) due to the usually thick capsule.

Two clinical presentations are associated with an intraperitoneal rupture of benign, cystic teratomas^(1,5). The first is acute peritonitis caused by the rupture and sudden release of tumour contents, which may occur spontaneously, or in association with torsion, trauma, infection or labour. The second presentation is chronic granulomatous peritonitis resulting from a chronically leaking dermoid, characterized by multiple, small, white, peritoneal implants and dense adhesions, and variable ascites that simulate carcinomatosis or tuberculous peritonitis. Fluid collection can also occur in the bilateral, paracolic gutters and between the mesenteric leaflets. The latter is the more common presentation⁽¹¹⁾, as seen in the presented case.

In addition to intraperitoneal rupture, the dermoid cyst may perforate into an adjacent organ. Although the latter occurs less frequently, numerous reports document spontaneous rupture of ovarian dermoid cysts into the bladder, small bowel, rectum, sigmoid colon and vagina. A review of the published literature revealed case reports about the CT findings of intraperitoneal ruptures of a teratoma⁽¹²⁻¹⁶⁾.

The present CT findings clearly demonstrated the rupture of sebaceous material into the peritoneal cavity, including fatty-fluid layering ascites and fatty implants. The fat globules may embed in the peritoneal cavity or visceral surface, such as the liver. The presented case demonstrated marked ascites with fatty-fluid and omental infiltration, likely related to the chemical or granulomatous peritonitis induced by chronic leakage of sebaceous material.

Conclusion

The authors encountered CT findings indicating fatty-fluid and ascites in the peritoneum, which

could be a reliable sign of intraperitoneal rupture of abdominal teratoma (dermoid) and subsequent chemical peritonitis.

Acknowledgments

The authors wish to thank Mr. Bryan Roderick Hamman for his assistance with the English-language presentation.

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ภาพรังสีเอกซเรย์คอมพิวเตอร์ ภาวะช่องท้องอักเสบทางเคมีจากโรคถุงน้ำรังไข่แตก: ภาพการตรวจทางรังสีวิทยาที่เป็นลักษณะเฉพาะร่วมกับทบทวนวรรณกรรม

เบญจพร นิตินาการ, วิฑูรย์ ประเสริฐเจริญสุข, จุไรรัตน์ กุหลาบแก้ว

ผู้ป่วยหญิงโสดอายุ 41 ปี มาโรงพยาบาลด้วยอาการท้องเสียมา 3 สัปดาห์ หลังจากรักษาที่โรงพยาบาลกลับบ้าน อาการท้องเสียดีขึ้น แต่ยังมีอาการไข้ร่วมกับปวดท้องและท้องอืดมากขึ้นมา 2 วัน

ตรวจร่างกายมีอาการซีด และท้องอืดบวมกดเจ็บเล็กน้อย

การตรวจทางรังสีวิทยา ได้แก่ फिल्मเอกซเรย์ช่องท้องและเอกซเรย์คอมพิวเตอร์ พบเนื้องอกขนาดใหญ่ที่มีหินปูนจับบริเวณท้องน้อยด้านขวาเข้าได้กับถุงน้ำรังไข่ ร่วมกับการพบน้ำในช่องท้องที่มีลักษณะของระดับหยดไขมันลอยหน้าอยู่ในส่วนของน้ำในช่องท้อง ทำให้นึกถึงภาวะโรคถุงน้ำรังไข่ที่รั่วแตก ผู้ป่วยได้รับการผ่าตัดพบถุงน้ำข้างรังไข่ข้างขวาขนาด 14 ซม. ที่มีรอยทะเล 5 มิลลิเมตรและน้ำปนไขมันในช่องท้อง 1 ลิตร ช่องท้องอักเสบทางเคมี หลังผ่าตัดผู้ป่วยมีอาการเป็นปกติ
