

Retroperitoneal teratoma misdiagnosed as ovarian tumor: a case report

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Summary

Objectives: To improve the knowledge about retroperitoneal teratoma and reduce the misdiagnosis rate by reviewing a case of retroperitoneal teratoma that was misdiagnosed as an ovarian tumor and analyzing the reasons for misdiagnosis. **Case Report:** The medical records of a patient with retroperitoneal teratoma misdiagnosed as an ovarian tumor were retrospectively analyzed. The retroperitoneal teratoma misdiagnosed as an ovarian tumor was completely removed through laparoscopy, and the postoperative pathological examination indicated it was a retroperitoneal mature cystic teratoma. **Conclusion:** Thorough auxiliary examinations should be performed for pelvic space occupying diseases, in addition to the conventional gynecological examination and rectal examination, and CT and MRI should be performed for determination of mass localization. Laparoscopic exploration as an optional surgery could be considered by skilled gynecologists.

Key words: Retroperitoneal teratoma; Misdiagnosis; Ovarian tumor.

Introduction

Retroperitoneal teratoma is located in the retroperitoneal space, which is derived from the retroperitoneal residual embryonic tissues, and it accounts for 1% to 11% of primary teratomas [1] and is rarely found in adults.

Case Report

A case of giant retroperitoneal teratoma in an adult that was misdiagnosed as teratoma of the ovary is described. The causes for misdiagnosis were analyzed and the relevant literature was reviewed in order to increase knowledge about retroperitoneal teratoma and to reduce the misdiagnosis rate. In addition, the feasibility of a laparoscopic surgery for removal of retroperitoneal teratomas is discussed.

The patient was a 25-year-old woman admitted to the present hospital because of the 'presence of a mass in the pelvic cavity for two months.' The admission physical examination indicated that the patient was in good condition with stable vital signs. The gynecological examination showed there was no abnormality in the vulva, vagina, or uterine cervix. There was no obvious mass in the bilateral uterine appendages and no tenderness. The vaginorecto-abdominal examination indicated that there was a detectable mass on the right side of the pelvic cavity, with a diameter of 5 cm and clear boundaries and a moderate texture; the bottom of the mass was fixed to the right pelvic wall. There was no detectable abnormality in the left part of the pelvic cavity.

Auxiliary examinations: A B ultrasound examination was performed on May 17, 2016 in the present hospital and it showed a mass with a mildly hyper-intensity echo signal in the right posterior of the uterus, 50×28 mm, with clear boundaries. The shape

was irregular and the echo signal was uneven; however, there was no obvious colorful blood flow signal. The B ultrasound examination was re-performed on June 18, 2016 in the First Affiliated Hospital of Zhongshan University and it was observed that the structure of the bilateral ovaries was clear and a mass 49×39×54 mm was located posterior to the uterus, with clear boundaries from the bilateral ovaries. The shape of the mass was irregular with belt-like and dough-like hyper-intensity echo signals; however, there was no blood flow signal.

The preoperative relevant examinations were completed after admission and no abnormalities were noted on color ultrasound examinations of the bilateral kidneys, ureters, and bladder. Additionally, no abnormalities were noted on a gastroduodenoscopy examination. Whole abdominal spiral CT plain scanning (Figure 1) in combination with enhancement and three-dimensional reconstruction (Figures 2-4) showed that 1) there was a space-occupying mass in the right posterior of the uterus in the pelvic cavity, and therefore a right appendage-derived benign teratoma was considered as a possible diagnosis, and 2) there was a small cyst in the left kidney and a calcification foci in the right lobe of the liver. Pelvic MRI (Figures 5-8) with enhancement indicated that there was an abnormal signal from the right side of the Douglas cavum.

Preoperative intestinal preparation was performed two days before the procedure and then laparoscopic exploration was performed on July 18, 2016. It was found during the surgery that the uterus was in the anterior position with a normal size and smooth surface, the omentum was adhered to the pelvic wall, and there was no abnormality apparent in the bilateral ovaries and fallopian tubes. A 5-cm cystic mass was protruding from the posterior of the uterus and the right side of the Douglas cavum and it adhered to the intestinal wall on the right side (Figure 9). The adherence was separated by monopolar electrocoagulation and the right peri-

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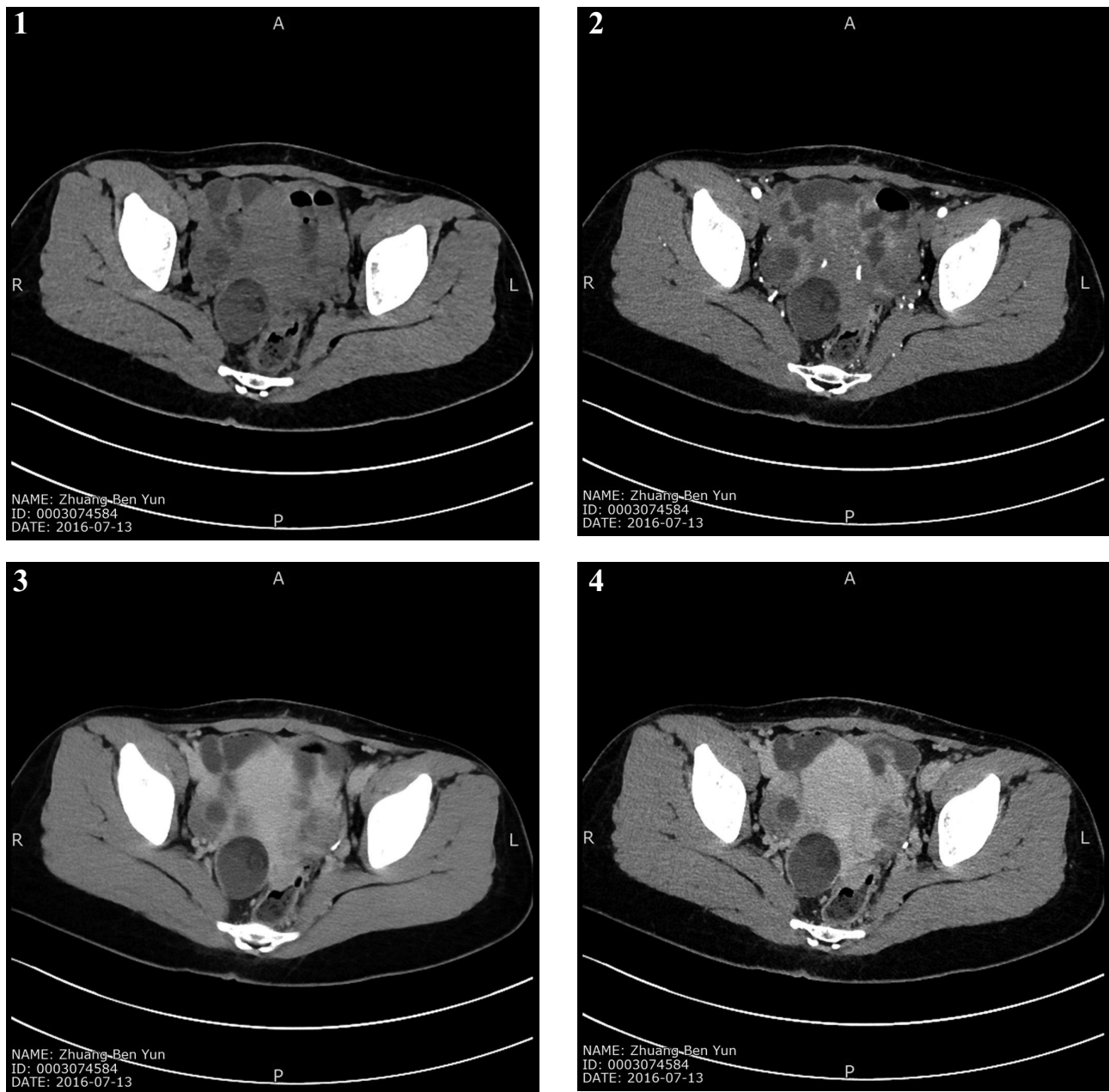


Figure 1. — CT plain scan. The ellipse-like mass with mixed densities is visualized on the right side of the uterine rectum fossa (indicated by the black arrow); a signal of small nodular fat density is detected in the middle of mass (indicated by a white arrow). Figures 2–4. — CT enhancement scan. There is no obvious enhanced signal within the lesion during the enhanced arterial phase, venous phase, or delayed phase (indicated by a black arrow).

toneum was cut open in order to separate the right ureter. The envelope of the mass was opened using an ultrasound knife and the mass was completely separated by blunt dissection. The operation time was 40 minutes with an intraoperative blood loss of 20 mL.

The intraoperative frozen pathological examination suggested a mature cyst teratoma. The postoperative pathological examination suggested a retroperitoneal mature cyst teratoma (Figure 10). Postoperative preventative anti-infection treatment, liquid sup-

plements, and supportive and symptomatic treatments were provided to the patient who was discharged five days after suture removal.

Discussion

A teratoma is a germinoma originating from pluripotent germ cells, which are usually found in the sacrococcygeal



Figure 5. — MRI T2. The ellipse-like mass with iso-hypodensity signal is visible on the right side of the uterine rectum fossa by MRI plain scan (indicated by a black arrow). The signal of the small nodular hyperdensity signal is visible (indicated by a white arrow).

Figure 6. — MRI T2. The fat suppression signals show inhomogeneity (indicated by a black arrow), and the multiple arc-like hypodensity signals are visible (indicated by a white arrow).

Figures 7 and 8. — MRI positive and negative phases. The hyperdensity signal of the lesion is visible (indicated by a black arrow) and the nodular hypodensity signal is visible as well in the middle of the lesion (indicated by a white arrow). There is no significant difference in the signal of the lesion between the positive and negative phases.

region, mediastinum, retroperitoneum, ovary, and testis. A retroperitoneal teratoma is mainly derived from the retroperitoneal space comprising adipose tissue, loose connective tissue, fascia, muscle, blood vessels, nerve tissue, lymphatic tissue, and embryo residual tissues. Since there

is no anatomical structure preventing the growth of a teratoma in the retroperitoneal space, the clinical manifestation at an early stage is not overt; an abdominal mass, bulge, or pain will not occur until the tumor is quite large.

Teratomas are usually benign tumors with a malignant

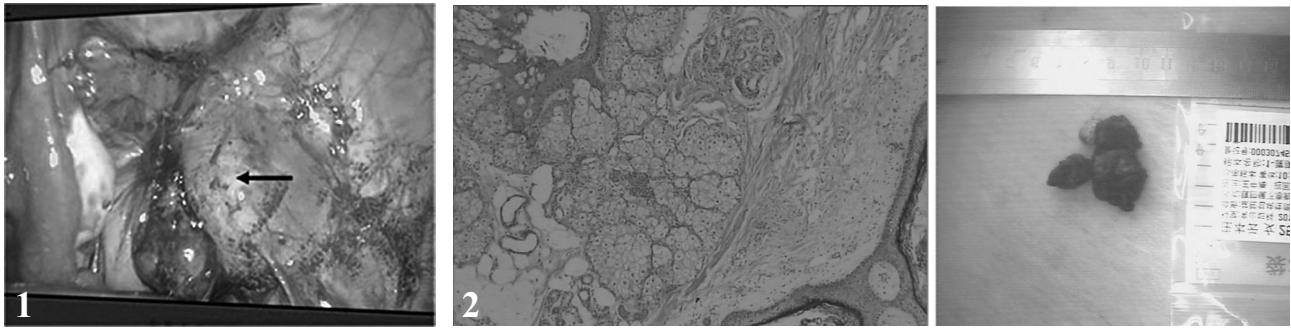


Figure 9. — The arrow shows an outward protruding mass at the right rectal fossa.

Figures 10. — Pathological diagnosis. The cystic internal wall is covered by the mature squamous epithelium containing cornification. The skin appendages such as mature sweat glands and hairs are visible under the epithelium. (Retroperitoneal) mature cystic teratoma.

tendency that increases with patient age [2]. It is rare in adults for a teratoma to rapidly enlarge in a short period with surrounding nerve compression symptoms such as pain and pressure, or with an increase of serum biomarkers of tumors. Only 7.7% of retroperitoneal teratomas occur in adults [3].

The patient in the current report was a young woman who presented with a mass in the pelvic and abdominal cavity. The mass was located in the right side; the space-occupying symptoms were not overt because the mass was not large. Because there were no obvious symptoms, the diagnosis could not be made merely based on its clinical manifestation and therefore the patient was recommended to undergo annual B ultrasound examinations.

A teratoma contains ectoderm, mesoderm, and endoderm tissues; therefore, bone, soft tissue, liquid, fat, and hair can be found in the teratoma. Imaging examinations such as B ultrasound, X-ray film, CT, and MRI can accurately differentiate the classical retroperitoneal teratoma from other types of tumor. Non-classical retroperitoneal teratomas need to be differentiated from liposarcomas, renal pole masses, cystic lymphomas, mesonephric cysts, traumatic blood cysts, and acute bleeding chocolate cysts [4].

B ultrasound examination cannot differentiate the origin of tumor as in the pelvic cavity, the abdominal cavity, or the retroperitoneal cavity; therefore, it has limitations. CT and MRI can accurately locate the position of a tumor and clearly display the invasive field of the tumor and its relationship with the surrounding vital organs, blood vessels, and nerves. They are also useful for postoperative follow-up examinations, which can identify the recurrence of tumors in a timely fashion [5].

Gynecological examination, especially digital rectal examination, is necessary for the diagnosis of retroperitoneal tumors in the pelvic cavity. To confirm the diagnosis, a gastrointestinal barium, barium enema, and intravenous pyelography can be carried out if necessary, in order to be aware of the compression condition of the corresponding gas-

trointestinal tract, kidney, ureter, and bladder.

In the current report, the examinations mentioned above were all performed and no abnormality was found. A classic retroperitoneal teratoma was diagnosed before surgery through the imaging and physical examinations. The teratoma was primarily diagnosed by B ultrasound and CT; an ovarian appendage-derived teratoma was considered after CT scanning because it was located in the pelvic cavity and closely connected with the left ovarian appendage. The patient also underwent pelvic MRI examination in order to determine the boundaries and location of the tumor, and to confirm the origin of the tumor to avoid misdiagnosis. Therefore, an imaging diagnosis is critical for retroperitoneal teratoma, and the technical competency of the physician is important.

Surgery is the only treatment for retroperitoneal teratoma and a complete and thorough dissection must be carried out to avoid postoperative recurrence. A preoperative intestinal preparation should be completed because of the close relationship of the tumor with the pelvic organs. A sacrococcygeal teratoma is closely connected with the coccyx, and the rectum and sigmoid colon are anterior to the tumor, the ureter and iliac blood vessels are on the lateral side of the tumor, and the presacral venous plexus is posterior to the tumor; therefore, complete dissection of a teratoma is difficult. There is high risk of intraoperative injury to surrounding organs that can result in massive hemorrhage.

Abdominal open surgery is suitable for a retroperitoneal teratoma with a high position and large size; however, the risk of surgical injury is relatively large and postoperative recovery is slow. A sacrococcygeal teratoma in a lower position is difficult to expose. In the current case, the intestinal adhesion was dissected by an ultrasound knife. The right peritoneum was cut open in order to separate the right ureter. The envelope of the mass was opened by an ultrasound knife, and the mass was completely separated by blunt dissection and thoroughly removed. The dissection was performed close to the tumor capsule to avoid injury to

the presacral vessels. The tumor was separated between the boundary and the coccyx space. Bipolar electric coagulation can be used as electrocautery for the bottom capsule of the tumor if the bottom of tumor cannot be completely removed, and the electrocautery site can be repeatedly rinsed with anhydrous ethanol to avoid postoperative recurrence.

Because of the magnification effect of laparoscopy, in the current case the vision field was clear and the tiny space and vessels were clearly displayed, which was useful for separation of adhesences from the tumor space. Since the position of the sacrococcygeal teratoma was relatively low, the exposure by laparoscopy was difficult and it was challenging to perform sacrococcygeal teratoma dissection via laparoscope. The surgeon must be very familiar with the anatomy of the pelvis and have skilled laparoscopic techniques [6].

The retroperitoneal teratoma in the current report was completely dissected via laparoscope, with an intraoperative blood loss of 20 mL, without surrounding organ injury. The patient was discharged five days after surgery, indicating that a laparoscopic surgery is feasible for retroperitoneal teratoma. The separation of surrounding tissues should be carried out under direct vision and close to the tumor capsule to avoid any injury to the intestine and ureter. Rectal injury is a common complication in a surgery for pelvic retroperitoneal teratoma. Preoperative intestinal preparation is absolutely necessary because any repairs to the intestine can be performed immediately under the laparoscope if there is any injury during the surgery.

Bleeding is another common complication of sacrococcygeal tumors. Hemostasis should be carried out along with the separation. Close separation along with the tumor boundary is performed to avoid injury to the presacral venous plexus. It has been reported that laparoscopic ligation of the median sacral artery before excision can effectively reduce intraoperative bleeding [7, 8].

Adult primary retroperitoneal teratoma is insensitive to radiotherapy and chemotherapy. Chemotherapy is not nec-

essary for a benign teratoma if the excision is complete. However, chemotherapy is needed for patients with postoperative residual tumor tissue or those that cannot be removed by surgery [2]. The postoperative follow-up examinations are very important for malignant tumors or for tumors with malignant tendencies.

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