

Case Report

Giant mature retroperitoneal teratoma in adolescent: a rare case report

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ABSTRACT

Teratomas are neoplasms of the embryonic tissues that typically grow in the gonadal and sacrococcygeal regions of adults and children. Intrabdominal teratomas that occur in adolescent are rare and demand challenging management options. We report a case of an intraabdominal mature cystic teratoma in a 17-year-old female patient. Complete resection of the mass was performed by a laparotomy approach. Radiological imaging is helpful in preoperative diagnosis and planning. Multidisciplinary surgical team planning is also essential to avoid injury to the adjacent organs in duodenal teratoma operation. Complete surgical excision is the treatment of choice, and the prognosis of mature teratomas is excellent.

Keywords: Retroperitoneal, Giant mature teratoma, Adolescent

INTRODUCTION

Teratomas are congenital tumours consisting of formation from the ectoderm, endoderm and mesoderm germ cell layers.¹ They usually occur in midline (paraxial) structures. The most common sites are gonads (testes and ovaries) followed by extragonadal sites such as intracranial, cervical, mediastinal, retroperitoneal, and sacrococcygeal regions.² Malignant mature cystic teratomas (0.2-2% of cases) have the potential to metastasize to sites such as the retroperitoneal lymph nodes and lung parenchyma.³ They are believed to arise as metastasis from the gonadal tissue rather than to represent true primary tumours and are more common in childhood and rarely occur in adults.¹ Only a very few case reports have been documented in literature so far.³ The majority of cases are asymptomatic, present with nonspecific complaints, or are identified incidentally on routine investigations. Surgical excision of mature (benign) teratoma is required for a definitive diagnosis by histopathological examination and is the mainstay of treatment.⁴ The current study presents the case of a giant intraabdominal teratoma that cause renal and hepatic

compression in a 17-year-old female. The teratoma was successfully with surgical resection with laparoscopy.

CASE REPORT

A 17-years-old female patient visited surgical clinic complaining chronic abdominal pain and distended abdomen since 1 year ago. Pain was described as aching and intermittent pain. Patient previously never checked her condition because she felt the pain was bearable, but since 1 week before her first visit at the clinic, patient felt the abdominal pain was getting worse and her parent finally decided to see a surgeon. Her abdominal distention was growing slowly but progressive. During the investigation at Sanjiwani Hospital in Gianyar district, she had an abdominal CT scan with (Figure 1) and without contrast in sectional (Figure 2) and coronal view (Figure 3). The result was found solid cystic mass with solid and fatty component. Septum and calcification showed within the mass, the size was reported 30 x 12 x 12 cm filled the entire abdominal cavity behind the peritoneal layer, and from the contrast we found that the mass was appeared alike giant teratoma figure.



Figure 1: CT image without contrast of a giant intraabdominal teratoma (cross-sectional view).

Before the surgery we could not predict the original source of the teratoma because it filled the entire intraabdominal cavity. During the laparotomy surgery, macroscopically we evaluate that the mass was attached to several organs behind the peritoneal layer. The mass was attached by stem alike membrane that made the operator able to resected the whole mass by ligated the stem that connected the mass to related organs. We dissected a well-circumscribed mass with size 27 x 18 x 15 cm and the surface was intact (Figure 4). Specimen was filled with yellowish fat and hair.



Figure 2: CT image with contrast of a giant intraabdominal teratoma (cross-sectional view).

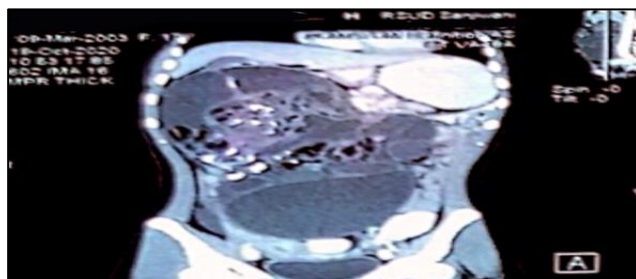


Figure 3: CT image with contrast of a giant intraabdominal teratoma (coronal view).

Specimen then sliced and observed microscopically and showed that the composition was cyst alike tumor with skin tissue, nerve, intestine, cartilage and mature gland. No ovarian tissue was found in the specimen. The biopsy concluded the morphology was appropriate as mature cystic teratoma.

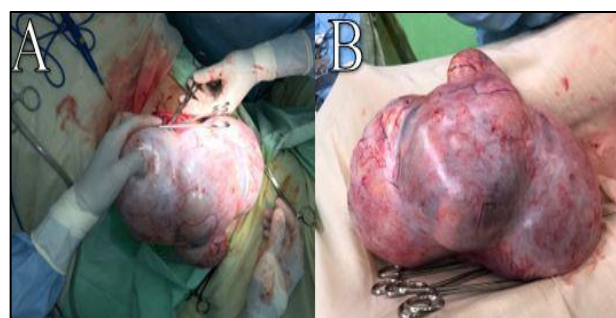


Figure 4: A) Giant teratoma during laparotomy, B) post excised mass.

DISCUSSION

A teratoma is a tumour composed of tissue derived from two or three germ layers (ectoderm, mesoderm, and endoderm). Teratomas are divided into three categories: Mature teratomas, immature teratomas, and monodermal teratomas. Mature teratomas are tumours composed exclusively of mature tissue. Immature teratomas contain variable amounts of immature tissue, typically primitive or embryonal ectodermal tissue, while monodermal teratomas are almost exclusively composed of one type of germ layer.⁵

Totipotent stem cell lines have been implicated as progenitor teratoma cells. Molecular biology and karyotyping suggest that extragonadal teratomas are thought to arise from primordial germ cells or early embryonic cells, while gonadal teratomas arise from germ cells in which parthenogenesis has occurred.⁶ Teratomas can occur in a wide range of ages but exhibits two peaks in incidence. The first is at approximately 2 years of age, and the second is in late adolescence or midline region.⁷

Extragonadal teratomas are very rare. The most common site in the early young adulthood extragonadal group is the sacrococcygeal region, followed by the head and neck. The location of teratomas is usually gonadal tissue and the teratomas have been occasionally reported, including in the stomach, terminal ileum, retroperitoneum, mediastinum, brain, liver, and abdominal wall.⁸

Gastrointestinal teratomas have a higher frequency in metastasis from other organs should be excluded. Gastrointestinal teratomas have variable clinical presentations depending on the organ of origin and compression symptoms. The symptoms include asymptomatic, abdominal pain with or without nausea, constipation and intestinal obstruction.⁸ Regardless of the benign histological nature of mature teratomas, close follow-up is recommended because the incidence of malignant transformation is approximately 3–6%.⁹

Because some part of malignant teratomas tend to progress rapidly. Radiological imaging is a useful tool for the diagnosis of these tumours, not only to locate the precise site of the tumour but also to display the adjacent structure

near the tumour, which can guide preoperative planning. Mature teratomas have some characteristic imaging features. A plain film may show rim calcification or teeth like components. Ultrasonography can reveal an anechoic or hyperechoic mass due to the presence of fluid, hair, fat and calcification. Computed tomography often reveals the complex, predominantly cystic masses that often contain fat and calcifications. The presence of a fat-containing cyst with mural calcifications is highly suggestive of a mature teratoma, but it may be difficult to distinguish between immature and mature teratomas on the basis of imaging alone.²

Macroscopic features of mature teratomas are usually cystic lesions containing hair and sebaceous material. The wall is thin and usually lined by an opaque white-gray wrinkled epidermis. There may be a solid component within the cyst that frequently contains dermal appendages, fat, teeth, cartilage or bone. Interestingly, all of the reported duodenal teratoma cases, including our case, have a communicating tract between the tumor and duodenal wall. Immature teratomas are usually larger than their mature counterparts.¹⁰ The microscopic features of mature teratoma are the presence of only mature tissue from three germ layers. The ectodermal derivative, the most abundant component, is represented by squamous epithelium, skin adnexal structures, and brain tissue. Mesodermal tissue includes fat, cartilage, bone, and smooth muscle tissue. Endodermal tissue is represented by the gastrointestinal epithelium, respiratory tract epithelium and thyroid tissue.⁵

The presence of immature embryonal-type tissue, including neuroectodermal tubules or rosettes, is the criterion for the diagnosis of an immature teratoma, which is a malignant neoplasm.^{11,12} Therefore, careful tumor sampling and thorough histological examination are highly recommended to avoid underdiagnosis, especially in tumors that have a large area of the solid component.⁵ The mainstay treatment of teratoma is surgery. Chemotherapy and radiotherapy have relatively small roles in management unless the tumor has a malignant counterpart. The prognosis of benign teratomas is excellent after complete surgical resection.

CONCLUSION

In conclusion, only a few case reports of the retroperitoneal teratomas have been documented in the literature so far. Though being usually asymptomatic, large neoplasms can cause abdominal and flank pain. Pre-operatively, the diagnosis can be established by its characteristic appearance by imaging modalities such as CT and MRI. However, although retroperitoneal teratomas can be radiologically recognised, it is important to note that masses in the suprarenal region are likely to be

confused with adrenal masses, as in our case during the preoperative stage. The definitive primary treatment of retroperitoneal teratomas is surgical resection.

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