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Case Report

Mature Cystic Teratoma in a 2 Year Old: A Case Report

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Article Information

Received date: May 15, 2017
Accepted date: May 26, 2017
Published date: May 31, 2017

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Keywords Mature cystic teratoma; Ovarian germ cell neoplasm

Abstract

Introduction: Mature Cystic Teratomas (MCTs) comprise the most common subset of germ cell neoplasms, especially in the pediatric population. Presentation of this tumor in children under the age of 6 is exceedingly rare.

Case: A 2-year-old girl presented with increasing abdominal pain and distension and underwent a CT that was suspicious for a teratoma. The diagnosis was confirmed by subsequent pathological examination after post-operative removal.

Discussion: Various laboratory and imaging studies can be used to diagnose MCTs. Clinically significant complications such as ovarian torsion and impact on future fertility must be considered when planning treatment options.

Conclusion: Though not previously reported in the literature, ovarian MCTs can present in a child as young as 2 years old.

Introduction

Mature cystic teratoma (MCT), also known as a dermoid cyst, is a germ cell tumor composed of mature germ cell elements, including ectoderm, endoderm, and mesoderm [1]. MCTs compromise approximately 10-20% of all ovarian neoplasms, 50% of pediatric ovarian masses, and 70% of all benign ovarian masses in reproductive years [1-4]. They may be bilateral in 10-15% of cases, but malignant potential only occurs in 1-2% of patients [1,5].

There have been reported cases of ovarian MCTs in patients as young as 6 and as old as 90, with the peak incidence being in patients 20-40 years old [1,3,6,7]. However, to our knowledge there has not been a reported case of an ovarian MCT in a child as young as 2, and germ cell neoplasm's in this age range are exceedingly rare [8]. We describe a case of a 2 year old with a mass suspicious on clinical exam and imaging for MCT, confirmed by pathology. We also examine the implications of surgical removal of such a mass in a pediatric patient.

Case Description

This patient is a 2-year-old female with no significant past medical history who presented to her local doctor with several days history of multiple episodes of vomiting, abdominal pain and distension, and decreased urine output. She had no weight loss, fever, constipation, or diarrhea. An abdominal mass was found on physical exam, and a CT scan of the abdomen revealed an 11 x 8 x 8 cm diameter cystic mass arising from right hemipelvis and extending into the abdomen cephalad as far as the inferior aspect of liver (Figure 1). It contained multiple different tissue densities, including

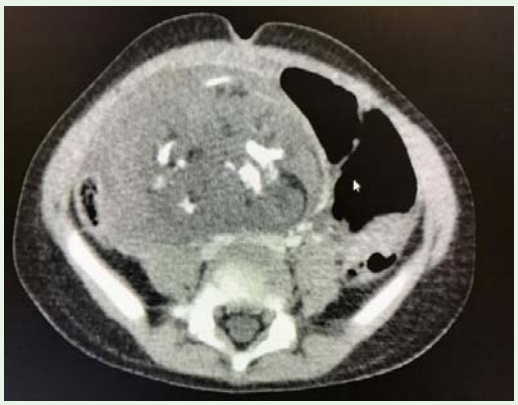

Figure 1: CT image showing multiple different tissue densities of mature cystic teratoma.

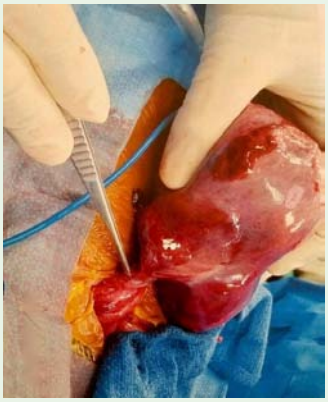

Figure 2: Mature cystic torsion during operative removal with indicated torsion.

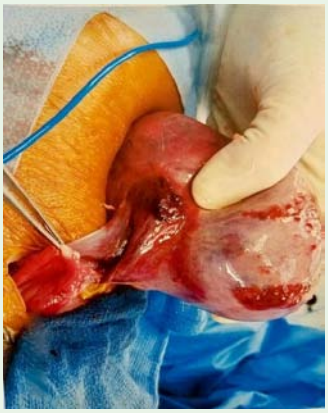

Figure 3: Mature cystic teratoma after ovarian de-torsion.

calcifications and possible teeth. No abnormalities were seen in the kidney, spleen, liver, or adrenal glands. Preoperative lab values included bHCG < 5, AFP 7.6, and LDH 194. She was transferred to our hospital and exploratory laparotomy revealed that the mass was a right ovarian tumor with torsion (Figures 2 and 3). The right ovary was torsed approximately 1.5 times and was completely black and necrotic. There was a large amount of clear ascites. The mass had a glistening capsule and was stuck in the pelvis due to inflammation. A right oophorectomy was performed. The left ovary and tube showed no masses, and there was no peritoneal seeding. Although there was no definite evidence of tumor in the omentum, it was thickened in areas and was removed.

Pathology revealed a mature cystic teratoma, which had undergone torsion and infarction. It contained skin, including abundant keratin, subcutaneous fat, cartilage, and bone. Focal areas show a low columnar, benign, epithelial lining and a small amount of lymphoid parenchyma. Extensive hemorrhage noted throughout the tumor, accompanied by granulation tissue and frank infarct. No malignancy was identified in the ovary, omentum, or peritoneal fluid. The patient had an unremarkable postoperative course and was discharged on post op day two.

Discussion

Mature Cystic Teratomas (MCTs) are the most common ovarian mass overall and specifically within the pediatric population [1]. Most MCTs are asymptomatic, as much as 64.5%, can present with non-specific symptoms such as abdominal pain and swelling, or can be found incidentally on imaging [1,9]. Ultrasound (US) is the imaging test of choice in the pediatric and pregnant population, those most common to have a MCT. There are certain characteristics of an MCT that can be seen on US, including a Rokitansky nodule, which is a densely echogenic tubercle, as well as other echogenic masses [2]. Other imaging options include CT or MRI, both highly sensitive for MCTs, even capable of detecting malignant transformation [2,3]. Our patient presented to our hospital having already received a CT scan at an outside ER facility, which was highly suggestive of a MCT, so it is unknown if an initial US would have been diagnostic.

Serum markers are often utilized in the workup of a suspected mass to rule out more dangerous malignancies, such as malignant germ cell tumors. These markers include α-fetoprotein (AFP), b-HCG, and LDH, and the significance of the elevation of one or more of these markers has been described elsewhere [6,7]. Once a tumor has been discovered on imaging, these markers may be helpful in distinguishing possible germ cell tumor type if not already known. In our patient, all three of these values were in a normal range.

There are a few distinct complications to ovarian teratomas that clinicians must be mindful of when considering treatment options. Ovarian torsion is by far the most common, reported in 3.2-16% of cases, and was present in our patient [1,2]. Other complications include rupture (1-4%), malignant transformation, especially to squamous cell carcinoma (1-2%), and infection (1%) [1,2,5,10]. Some of these complications preclude the possibility of cystectomy vs. complete oophorectomy, as in the case of our patient where the ovary could not be salvaged due to complete necrosis secondary to long term torsion [4]. Recurrence also needs to be considered when thinking about surgical removal, which may further influence treatment decisions [6,11].

One of the most important long-term sequela of MCT treatment is the impact on future fertility. Our case was unique in that this mass was present in a patient of very young age, and it had caused torsion of the ovary days prior to presentation leading to necrosis and excluding the possibility of a cystectomy and ovary-salvage. While it cannot be known if there will be recurrence of the tumor, it is unlikely.

Conclusion

Though not previously reported in the literature, ovarian MCTs can present in a child as young as 2 years old.

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Citation: Davis J, Chatterjee T, Abuhantesh A, Meller J and Nirgiotis J. Mature Cystic Teratoma in a 2 Year Old: A Case Report. SM J Case Rep. 2017; 3(3): 1051.

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