CASE REPORT

Teratoma in Children and Adolescent: Case Report

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ABSTRACT

Teratoma is a rare condition but represents the most common germ cell tumor in pediatric patients. Ovarian germ cell tumors account for approximately 27% of cases, while mesenteric teratomas are extremely uncommon, comprising only 1%. Early recognition is essential to ensure appropriate management and reduce morbidity and mortality. We report two pediatric cases presenting with abdominal enlargement. The first case involved a 6-year-old girl with a large abdominal mass and elevated alpha-fetoprotein (AFP) level. Imaging revealed a well-defined cystic lesion with solid components and calcifications in the right ovary. She underwent right oophorectomy, and histopathology confirmed an immature teratoma. The second case involved a 15-year-old girl with a large heterogeneous abdominal mass and normal AFP levels. Complete surgical resection was performed, and histopathology confirmed a mature teratoma. Clinical examination, imaging, and serum markers are essential for diagnosis, while complete surgical resection remains the mainstay of treatment, with chemotherapy indicated in selected cases.*Malaysian Journal of Medicine and Health Sciences* (2026) 22(SUPP6): 114-116. doi:10.47836/mjmhs.22.s6.26

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INTRODUCTION

Ovarian Germ Cell Tumor (GCT) is the second most common GCT for 27%. Approximately 80 to 90% are benign, typically comprising epithelial cysts or mature teratomas.(1) They frequently identified incidentally through radiography findings for another indications.(3) The etiology of teratomas is not fully understood and predominantly asymptomatic at the point of diagnosis. Commonly reported symptoms include abdominal pain and a gradual increase in lower abdominal fullness.(1) An immature teratoma is a cancerous neoplasm which originates from the three germinal layers of the ovaries. (2) Immature teratomas account for less than 1% of ovarian malignancies and are more common in young female populations aged 1 to 8 years.(2,3)

CASE REPORT

Case 1

A 6-year-old female patient was admitted to the emergency department (ED) presenting with pain in the right lower quadrant of the abdomen. The immunoserological assessment revealed elevated ovarian cancer markers and hepatoma markers, with an alpha-fetoprotein (AFP) measurement of 39.39 ng/ml, and a Ca-125 level of 71.9, whereas the beta HCG concentration remained normal (<1.20 mIU/ml). No evidence of metastasis was observed in the chest X-ray. The Multi-Slice Computed Tomography (MSCT) scan of the abdomen, demonstrated a heterogeneously dominant cystic mass 11x13x17 cm located in the pelvic cavity, which extended into the intra-abdominal region, leading to grade II hydronephrosis and hydroureter consistent with the imaging findings of a right ovarian teratoma. In this patient, a midline incision was made, and 100 milliliters of yellow ascitic fluid were collected and analyzed cytologically. Laparatomy oophorectomy dextra were performed and revealed a large tumor measuring 13 x 16 centimeters, partially cystic and partially solid, in the right ovary. Evaluation of the contralateral ovary found a normal appereance with diameter 2 x 1 centimeter. Assessment of the intra-abdominal cavity shows no nodules on the omentum or peritoneal wall, and the liver is smooth without palpable nodules. No lymphadenopathy was detected in the retroperitoneal or pelvic cavities. Specimens from the tumor, omentum, and peritoneum were submitted for histopathological examination, while samples from ascitic and peritoneal fluid were analyzed cytologically. Histopathology examination revealed malignant characteristics such as, including large, round nuclei, notably prominent nucleoli, and ample cytoplasm, which collectively formed structures resembling glands. Furthermore, components indicative of neuroepithelial origin were observed. These findings led to the conclusion that this was an immature/

malignant teratoma (Figure 1). Cytological evaluation of the ascitic fluid revealed a smear characterized by a dense aggregation of lymphocytic inflammatory cells with a scant erythrocytic background. No malignant cells were identified in the examined specimen. These findings support the conclusion of an inflammatory lesion without evidence of malignancy. Cytological evaluation of the peritoneal fluid demonstrated a highly cellular smear composed of numerous mesothelial cells, both scattered and clustered, exhibiting nuclear size variation, accompanied by abundant lymphocytes. These findings were consistent with reactive mesothelial cells associated with inflammation.

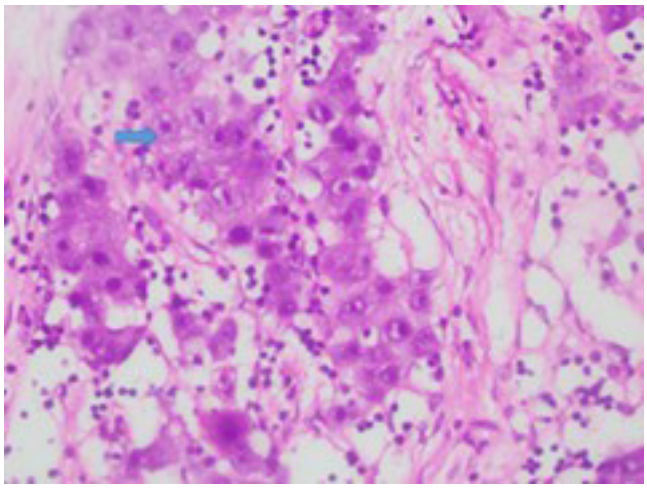

Figure 1: Histopathological Findings. There is a neuroepithelial component (blue arrow). (hematoxylin and eosin, x10)

Case 2

A 15-year-old girl was with a complaint of a lump that had been noticed since 1 month ago. The patient's parents also complained that their child had difficulty holding urine since the age of 3 months. Immunoserology examination results were within the normal range for AFP (0.60 ng/ml) and Beta HCG (1.20 mIU/ml). Lumbosacral MRI examination showed a solid mass in the left abdomen 14 Ч 10 Ч 16 cm with solid, fat and cystic components. Laparotomy with complete tumor resection revealed a large mass measuring 21 Ч 15 Ч 9 centimeters, characterized by a bumpy surface, elastic consistency, well-defined borders, and apparent compression of the left kidney, with the tumor seemingly originating from the mesentery. Complete resection was performed until macroscopically healthy tissue was reached. The tumor contained hair, bone, and other tissues, which were sent to the Anatomical Pathology laboratory. Intestinal exploration identified a Meckel's diverticulum located 45 centimeters from the ileocaecal junction, with a base diameter of 1 centimeter and a length of 7 centimeters. Diverticulectomy was performed, and the specimen was sent to the Anatomical Pathology Laboratory. Histopathology examination confirmed a mature teratoma (Figure 2). The characteristics of both patients are summarized in Table I.

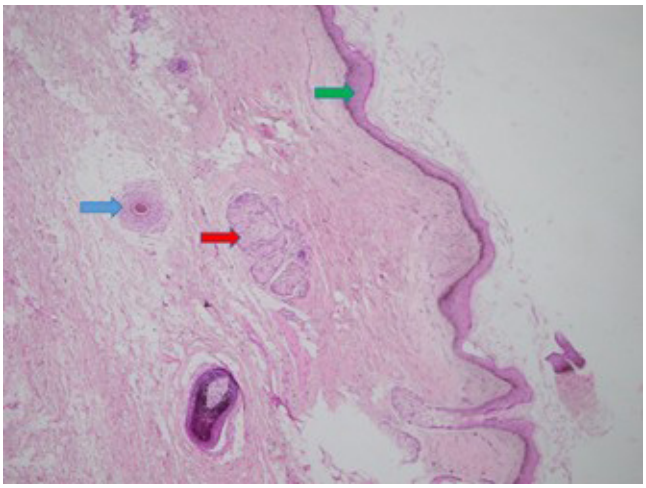

Figure 2: Histopathological image showing that the tumor mass consists of keratinized stratified squamous epithelium (green arrows), sebaceous glands (red arrows), eccrine glands, hair follicles (blue arrows), connective tissue (black arrows), fatty tissue (yellow arrows), seromusinous glands, respiratory epithelium, cartilage tissue and muscle tissue. (hematoxylin and eosin, x4

DISCUSSION

Teratomas are classified typology-wise as mature or immature, as one of the most frequent tumors in pediatric patients, with a certain prevalence in female ones (4:1). (1) Acute lower abdominal tenderness with nausea/vomiting and fever may indicate adnexal torsion, tumor hemorrhage, or rupture.(3) The tumor often remains asymptomatic until significant growth compresses adjacent structures, leading to hydronephrosis. Our patient presented with right lower abdominal pain and abdominal enlargement. Imaging revealed a heterogeneously cystic mass in the pelvic cavity, consistent with a right ovarian teratoma and resulting in hydronephrosis. In the diagnosis of teratoma, imaging plays a vital role. Ultrasound may reveal a cystic mass with fat-fluid levels and calcification enhancement (4). Furthermore, CT or MR imaging aids in recognizing fat components for diagnosis. MR imaging is preferred for pediatric patients to reduce radiation (1).

Persistently elevated AFP levels may indicate a teratoma (2). The relevance of tumor markers in differentiating benign from malignant germ cell tumors remains debated. Elevated AFP or β-hCG signifies malignancy. Over 90% of children with malignant teratomas exhibit increased AFP, while 30% show elevated β-hCG.(4) One of our cases had increased AFP and beta HCG level, however the other had normal range. Additionally, our patient with immature ovarian teratomas presented elevated Ca-125 levels, which are primarily used for ovarian disease assessment despite potential increases in other conditions. Approximately 12.7% to 24% of patients with MCTs exhibit elevated CA 125 serum levels, indicating potential malignancy (2). Oncogenic fetoproteins (AFP and β-hCG) serve as critical biomarkers for diagnosing and monitoring GCTs, contributing to

Table 1. Characteristics of two patients

Clinical Data	Case One	Case Two
Age	6-year-old-girl	15-year-old-girl
Clinical Features	Abdominal mass	Abdominal mass
Physical examination	A palpable mass described as solid, firm, well-circumscribed, with a smooth surface, lacking fluctuation, immobile, measuring approximately ±12 cm x 6 cm x 4cm, with tenderness proving difficult to assess.	A mass was felt in the left lumbar region measuring 5x3cm, with a firm consistency, mobile, and no tenderness
AFP	Increased	Normal
Beta HCG	Normal	Normal
Ca-125	Increased	-
Laboratorium	Thrombocytosis, anemia	Increased ESR, anemia
USG	Normal	Normal
CT Scan /MRI Abdomen	A predominantly cystic mass, well defined, with solid-cystic septations and calcifications in the right ovary 11 x 13 x 17 cm	A heterogeneous mass, well defined with septations and regular edges in the left abdomen 14 x 10 x 16 cm.
Location	Ovarium dextra	Mesenterium (Intraabdominal)
Surgery	Exploratory laparotomy and right oophorectomy	Exploratory laparotomy and incidental diverticulectomy
Gross	The specimen, which measures 13 x 16cm, presents both cystic and solid traits in the right ovarian tissue.	The dimensions of the specimen are 21 x 15 x 9cm
Histopathology	Teratoma Immature / Malignant Teratoma	Teratoma Mature and Meckle's Diverticulum

disease management (5).

Complete resection remains the optimal treatment for teratomas, with conservative approaches recommended for ovarian cases to preserve fertility. The goals of surgical management include definitive diagnosis, complete removal of the tumour and staging for malignancy (through abdominal and pelvic exploration, peritoneal washing, contralateral ovary inspection, biopsy of the omentum and of other suspicious lesions and of periaortic and pelvic lymph node). In case number 2, the patient was diagnosed with an immature/malignant teratoma without evidence of adnexal metastasis. Staging was performed after oophorectomy dextra, peritoneal washing, and meticulous inspection of the abdominal cavity. The patient's initial symptoms and diagnostic criteria were assessed, and the case was categorized and staged as stage II according to the Children's Oncology Group (COG) guidelines. Subsequently, the patient completed four cycles of platinum-based chemotherapy with the BEP regimen (bleomycin, etoposide, and cisplatin) in April 2025.

The recurrence risk is influenced by site, histological grade of immaturity, and extent of initial resection, with a 2% to 3% risk of future germ cell cancers in young patients with mature tumors.(2,5)

CONCLUSION

Physical examination, radiological characteristics, and serum markers support the diagnosis of teratoma tumor. Laparatomy complete resection is indication for large masses and suspicious of malignancy. Chemotherapy after surgery is essential and help achieve five-year overall survival. Ultrasound follow-up twice a year is needed to enable early diagnosis in contralateral tumour of ovarian teratoma.

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