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Case Report

Mature Gastric Teratoma in Newborn- Unusual Localisation of Rare Tumor

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Abstract

Teratomas are rare neoplasms composed of three germ cell layers elements, occurring in either gonadal or extragonadal locations. Gastric teratoma is an extremely rare neoplasm.

Here, we present the case of a male newborn with prenatally diagnosed complex abdominal tumor on fetal MRI. After delivery, diagnostic imaging has been completed include ultrasound, X-ray and MRI. All laboratory tests, including beta-human chorionic gonadotropin (βhCG) and Alpha-fetoprotein (AFP) were normal. Exploratory laparotomy was performed and the mass was excised in toto. The histopathology was reported as mature gastric teratoma. There has been no evidence of recurrence during the follow-up period of two years.

Keywords: Germ-Cell Tumor; Teratoma; Newborn

Introduction

As extremely rare neoplasm, according to published articles, gastric teratoma accounting for less than 1% of all teratomas occurring in infancy and childhood [1,2].

Prenatally diagnosed complex abdominal tumor in fetus has a long list of potential differential diagnosis, thus comprehensive diagnostic imaging allows appropriate approach and surgical treatment. Here, we discuss the case of abdominal tumor diagnosed prenatally, with radiological-surgical- pathological correlation.

Case Report

Here, we present the case of a male newborn with prenatally diagnosed complex abdominal tumor on fetal MRI (Figure 1). After delivery (cesarean section), a boy, weight 3,3 kg presented with abdominal distension (Figure 2). Patient was hospitalized in Neonatology unit and diagnostic imaging has been performed.

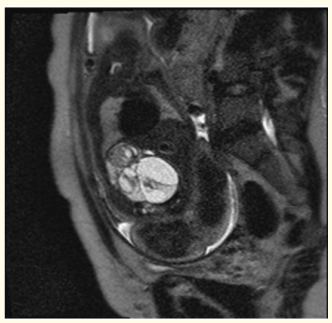


Figure 1: Fetal MRI-T2 tse SAG- Complex abdominal tumor of fetus.

All laboratory tests, including beta-human chorionic gonadotropin (βhCG) < 2,4 mlU/ml, alpha-fetoprotein 1210 ng/ml were normal, hemoglobin 17.6 g/dL and total leukocyte count of 18,400/cm. Kidney function tests and liver function tests were within normal limits.

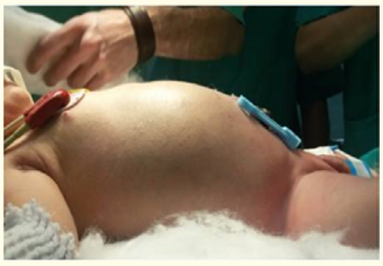


Figure 2: Newborn with abdominal distension.

The patient tolerated breast feeding without any vomiting. There was no history of exposure to any drugs or radiation to the mother in the antenatal period.

X ray showed a mass effect in the abdomen with calcifications in the left hypochondrium (Figure 3). Due to abdominal distension, there is significant compression to lungs.

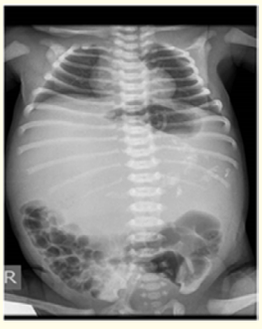


Figure 3: Abdominal x-ray- Calcifications in the left upper hypochondrium.

Ultrasound examination revealed a huge complex cystic mass with multiple septations and solid component in central part of abdomen (Figure 4).

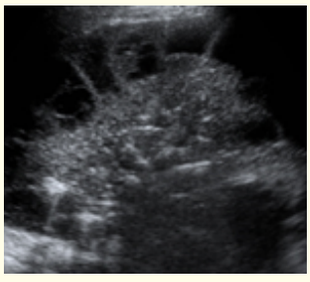


Figure 4: Ultrasound-Complex cystic mass with septations and solid component.

MRI scan showed heterointense, expansive, multilocular, mostly cystic mass with soft tissue components with moderate compression to surrounding structures. Tumor dimensions were in caudo-cranial diameter 11 cm and latero-lateral 10 cm (Figure 5).

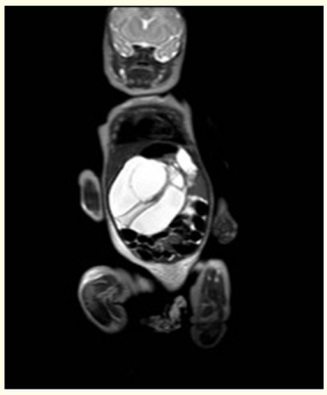
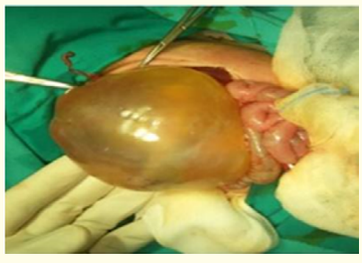


Figure 5: Postnatal MRI –T2 tse COR- Heterointense, expansive, multilocular, mostly cystic mass with soft tissue components.

Exploratory laparotomy through a billateralis supraumbilical transferse incision was performed. Tumor arising from postero-superior wall of the stomach along its greater curvature has been found. Greater part of the mass was lying outside the stomach while a small part was extending into the lumen of stomach. The mass was excised in toto with a small fringe of the gastric wall from which the lesion originated, rest of viscera was normal (Figure 6,7). The stomach was repaired in layers. Cut surface revealed large cystic areas with solid areas. Solid tissue was composed of greyish white areas with foci of cartilage and bone.



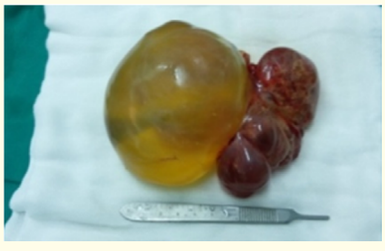


Figure 6,7: Intraoperative specimen of tumor.

Excited tumor was sent for histopathology and it was reported as mature gastric teratoma (Figure 8).

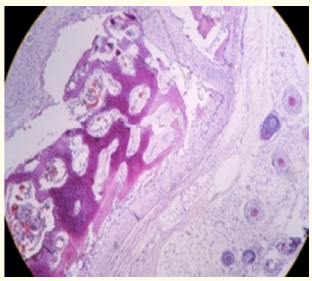


Figure 8: Ph –Mature gastric teratoma.

Post-operative course was uneventful.

Three months following discharge, the alpha fetoprotein fell to 182.91 ng/ml.

There has been no evidence of recurrence during the follow-up period of two years.

Discussion

The most frequent tumors that belongs to heterogeneous group of tumors from germ cell origin are teratomas, but in generally they are rare in pediatric population. Teratomas are comprised of mixed elements derived from the three germ cell layers, occurring in either gonadal or extragonadal locations. Extragonadal teratoma arising from abdominal viscera is very unusual. Most cases of extragonadal teratomas occur in the saccro-coccygeal region and mediastinum as well. Less than 1% are found in abdominal organs such as liver, kidney, vagina and stomach [3].

The first case of gastric teratoma was reported in 1922 by Eustermann and Sentry [4]. Since then around 100 cases are reported in the literature [5]. There is a prevalence of gastric teratoma in male patients.

Although teratomas mostly present as exogastric tumor mass they can also have endogastric growth. They are classified into mature and immature teratomas based on the presence and degree of differentiation of neuroglial tissue. Mature gastric teratomas are benign tumors which have a good prognosis after complete surgical excision [2].

Although a variety of symptoms has been reported, such as upper digestive tract bleeding and gastric perforation, the most frequent ones are abdominal distention, vomiting and abdominal mass. In our case, an abdominal distension was the only symptom, most likely because the diagnosis was suspected on prenatal imaging and later confirmed on postnatal examinations, so surgical intervention has been done a few days after birth.

Gastric teratomas can arise from any site of the gastric wall. They can be pedunculated and have exogastric growths in up to 70% of cases [6]. In the case we are reporting, teratoma arise from the postero-superior wall of stomach in the greater curvature with mainly exogastric growth.

There is a long list of differential diagnosis in abdominal complex cystic mass with calcifications including teratoma, neuroblastoma, nephroblastoma, angiomyolipoma and stromal tumors, among others.

Preoperative diagnosis of abdominal tumor such as teratoma is very important.

Abdominal x-ray is helpful for the visualization of calcification and its localization. Ultrasound can determine content in cystic part of the tumor, presence of soft tissue mass and also presence and type of vascularization and because of lack of ionizing radiation, it can be repeated at any time. The best spacious and tissue resolution is possible with MRI, and also the precise size of the tumor mass, as it was in our case, and without gadolinium it was possible to differentiate solid and cystic component.

We did not perform other modalities like barium meal and gastroscopy, which has a limited role in the diagnosis of gastric teratoma [7].

Prognosis following surgical excision has been excellent with report of one case of recurrence [8].

In most of reported cases, performing a partial gastrectomy seems to be sufficient treatment. However, in few patients total gastric resections were performed with good results [9]. The recommended treatment for both mature and immature teratomas is surgery and observation, with chemotherapy for extragonadal malignant germ cell tumors. It is considered that incomplete resection is mainly associated with recurrence [10].

According to National Cancer Institute guidelines, follow-up of alpha-fetoprotein levels is recommended for malignant lesions for at least three years [10].

Conclusion

Diagnosis of teratoma can be challenging, especially in those with extragonadal localization. Adequate prenatal and postnatal imaging are essential for early diagnosis and timely intervention.

The monitoring of AFP and beta hCG are mandatory in follow up reflecting treatment response after surgical excision and may be of significant value where chemotherapy is recommended in immature teratoma.

Surgical excision is the treatment of choice for long-term favorable outcome.

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