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Case Report

Childhood Giant Omental Lipoma - Report of a Case and Review of the Literature

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Abstract

Mesenteric lipomas are benign tumors of fat tissue. Although very uncommon during childhood, they can be either asymptomatic or producing digestive obstruction. In this case study we present a 2,6 year old girl with a huge mesenteric lipoma admitted in our clinic with unspecific symptoms. She underwent surgical resection without bowel resection, with good outcome. We also present a brief discussion about different abdominal tumors presenting at the same age.

Keywords: *Mesenteric Lipomas; Fat Tissue; Abdominal Tumors*

Introduction

Lipomas are benign neoplasms of the adipose tissue that may occur anywhere in the body [1].

Mesenteric lipomas are exceedingly rare in the pediatric population [2]. The diagnosis is based on both clinical and imagistic examinations, however only the histological study may confirm the diagnosis [3]. We present a case of giant omental lipoma in a pediatric patient who underwent surgical excision and had a favorable outcome, despite the rarity of this pathology.

Case Report

A 2 year and 6 months old patient presented with generalized tremor, abdominal pain and altered overall status, due to which she was admitted in a territorial pediatric department. After an apparent favorable evolution, the attending physician recommended an ultrasound examination which showed an abdominal tumor and the patient was transferred to our department.

Patient history revealed seizures of unknown origin, vomiting that started 4 months prior to admission, characterized by a small quantity and subsequent to ingestion of food, abdominal pain, psychomotor agitation, restlessness. Clinical examination showed a mass in the right upper quadrant of the abdomen, with a soft consistency and diameter of approximately 10 cm, relatively mobile on the surrounding anatomical planes. Also, a mild statural hypotrophy was determined.

Biological examination showed a slightly increased level of LDH and cholinesterase, WBC (12.300/ul) and Lymphocytes (8000/ul) were elevated, with a marginally low Fibrinogen, Hemoglobin, HCT and Neutrophils. Four days prior, patient's CBC was normal, with the exception of neutrophils, which were elevated. The preoperative care included determining the alpha fetoprotein, CA 125 and total and beta human chorionic gonadotrophin (hCG); the levels were within normal limits.

Imagistic exploration included abdominal ultrasound, abdominal and cerebral contrast magnetic resonance imaging (MRI), which required general anesthesia due to the small age of the patient.

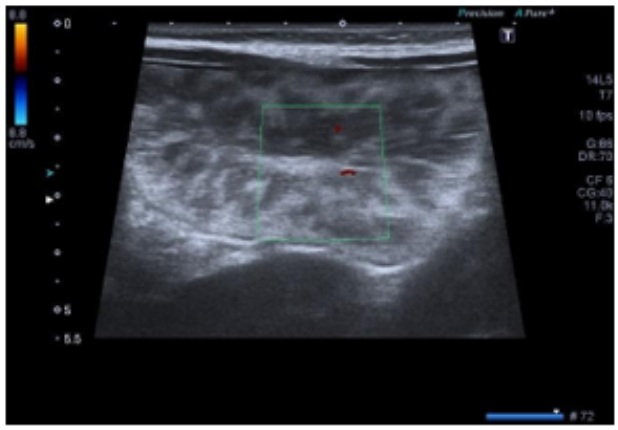

Figure 1: *Abdominal color doppler ultrasound showing the vascular signal of the mass and its location adjacent to the abdomial wall.*

Seeing that the patient presented with seizures prior to admission and in order to perform an MRI under general anesthesia, a pediatric neurology consult was essential. During the consult, an EEG was performed, revealing minimal alteration (bilateral parieto-temporal irritative pattern) which permitted sedation during the MRI, from a neurological point of view. The cerebral MRI showed asymmetrical hippocampus; diminished right hippocampus and moderate T2 and FLAIR hypersignal, no enhancement and no restriction at diffusion, suggesting right mesial sclerosis.

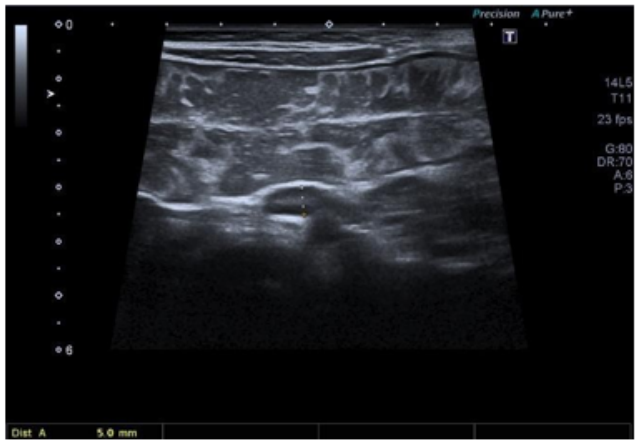

Figure 2: *Abdominal ultrasound revealing an inhomogeneous abdominal mass, with heterogenous echotexture, that presents an hyperechogenic band toward the interior. Adjacent to the tumor, there is a 5 mm short axis adenopathy with an adipose hilum.*

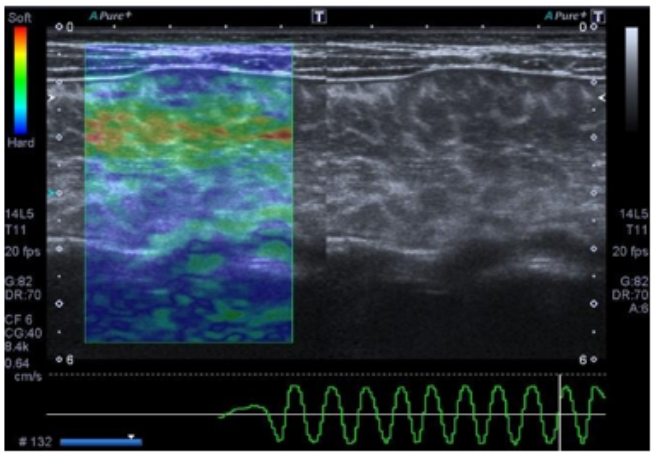

Figure 3: *Abdominal ultrasound elastography showing the tumor with its peripheric rigid consistency areas whilst the central area has a soft consistency.*

The abdominal MRI showed a well-defined mass, measuring 8/11/5 cm (craniocaudal/laterolateral/anteroposterior), located caudally to the liver and which determines the digestive structures to shift to the left. The mass had an adipose structure with vascular elements converging to a central scar without any septa visible toward the interior. The initial interpretation of the mass location was extraperitoneal, originating from the abdominal wall. This aspect suggested as a hypothesis a liposarcoma without the possibility of excluding another adipose structure lesion (lipoblastoma/lipoma) of the abdominal wall.

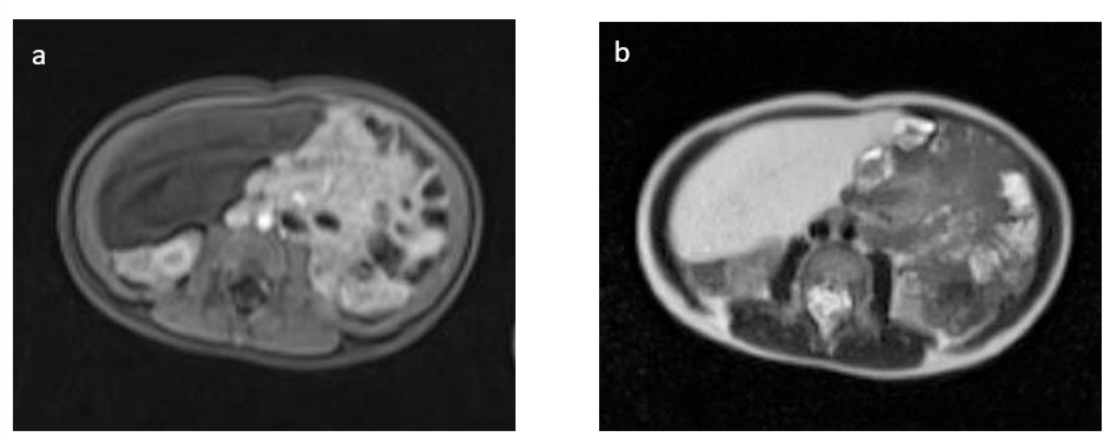

Figure 4: *T1 weighted FATSAT transversal abdominal MRI (a) and T2 weighted transversal abdominal MRI (b) showing an abdominal mass with a lipidic component, shifting the digestive structures toward the left.*

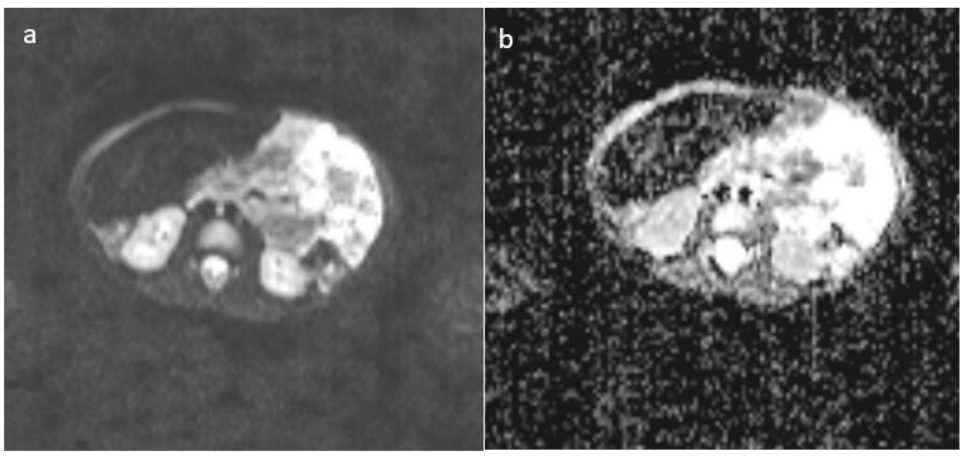

Figure 5: *MRI Coronal DWI (a) and ADC map (b) showing that the abdominal mass presents no restriction proof.*

Due to the hypothesis of abdominal wall tumor, on approach, the incision was made to run parallel to the right costal margin, starting below the xiphoid and extending laterally. The incision then passed through the all the rectus sheath and rectus muscle, internal oblique and transversus abdominus, before passing through the transversalis fascia and then peritoneum to enter the abdominal cavity.

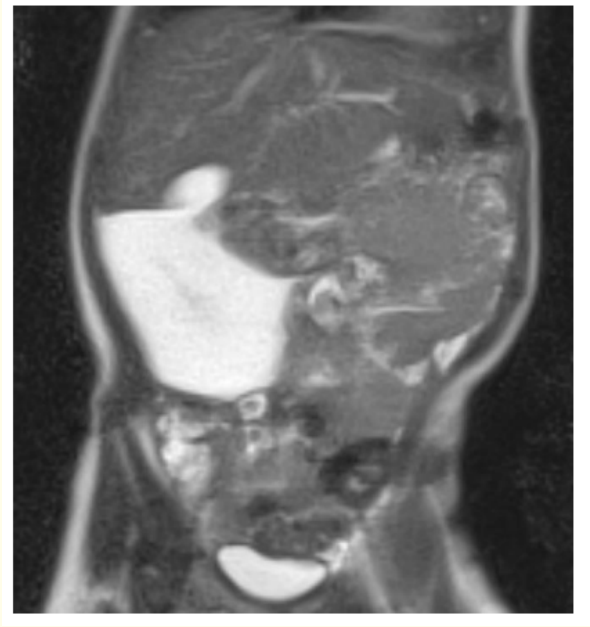

Figure 6: *T2 weighted coronal MRI of the abdomen showing no relative enhancement and revealing a central scar toward which some vascular elements are converging.*

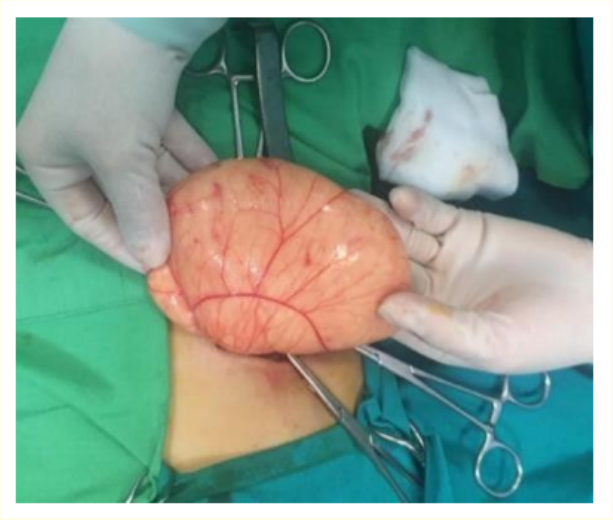

Figure 7: *Giant omental lipoma - intraoperative aspect.*

Subsequently to entering the peritoneal cavity, a large mass was found in the greater omentum which determined the bowel loops to shift to the left. The mass was 13/16/2 cm, had a greasy consistency, yellow color, well-defined margins with a thin membrane, in contact with the hepatic capsule, the gallbladder and the abdominal wall, but without invading any structure. The excision was uneventful and the abdominal wall was sutured layer by layer.

Histological examination showed lobules of mature adipocytes without any atypical cells, characteristic for a benign tumor: lipoma.

The one year follow up showed the lack of any abdominal complaints, but due to the diagnosis of right mesial sclerosis, the patient was scheduled for a neurosurgical consult.

Discussion

An omental lipoma is a well-defined, noninvasive, encapsulated tumor of mature adipose tissue [7] and represents a very rare benign lesion of mature adipose tissue [4] counting very few case reports in literature [8-14]. In the majority of cases, the omental lipoma is an incidental finding [8]. In 2007, a review of omental lipomas made by Cha, Jae Myung numbered under 30 cases of mesenteric lipoma, of which 7 were found in children [5,6]. The greater omentum mostly consists of fat tissue with blood and lymphatic vessels involved, therefore in clinical practice there is a great variety of primary tumors of the greater omentum such as leiomyosarcoma, fibrosarcoma, hemangiopericytoma, liposarcoma, leiomyoma, lipoma, fibroma and mesothelioma [10,15-17].

The etiopathogeneses is not yet clearly established [18]. The frequency of lipomas depends on the originating organ - the greater omentum lipomas are almost exclusively described in case reports [10,19-24] as they are extremely rare [12]. The percentage of lipomas reported in other sites is considerably higher: neck, shoulder, thorax, back, chest wall and retroperitoneum [12].

From a clinical point of view, the symptoms are is highly nonspecific and can be grouped as common features or acute abdomen. An omental lipoma rarely could cause gastrointestinal complaints: abdominal pain, nausea, vomiting related to the compression of the bowel

loops. The symptoms of an acute abdomen usually occur due to complications - torsion of the omentum along with the tumor originating from it [10,25,26]. The common presenting symptoms of a solid omental tumor include abdominal discomfort (45,5%), abdominal lump (39,4%), abdominal distension (15,2%). Nausea and weight loss may occur occasionally. Abdominal pain is usually exacerbated in the supine position but relieved in the upright position [27,28].

In Luo's case report an 11-month-old with giant omental lipoma presented with progressive abdominal distension for six months, relatively normal CBC and biochemistry and a normal alpha FP value [12], comparable to our patient. Similarly, Kriaa., *et al*. documented a case of a 3-year-old admitted with fever, abdominal pain and vomiting, the clinical examination revealing an abdominal mass with a diameter of approximatively 10 cm [18]. Even though there is a high similitude between our patient and Kriaa's from a clinical point of view, the latter was diagnosed with an omental lipoblastoma after the histology examination. Thus, both lipoma and lipoblastoma of the greater omentum begin by being asymptomatic and become symptomatic through size and location.

Regarding biological parameters, there is no specific value to be searched, although their role is important in assessing the patient's condition for surgery in the preoperative treatment, as well as in determining patient's stability in (and response to) postoperative care.

A peritoneal lipoma may be distinguished from a malignant tumor such as hepatoblastoma by the normal value of the alpha FP [20] which our patient too presented, but not from a lipoblastoma, as was the case with Mendez's 10-month-old infant with normal alpha FP value [29].

Preoperative management of the patient includes imagistic examinations such as echography, CT, MRI, which guide the treatment and oversee the differential diagnosis.

An angiomyolipoma, liposarcoma and lipoma with abnormal echography vasculature should always be considered in the differential diagnosis for a fat containing lesion [30,31]. A lipoma is a variably echogenic mass on ultrasound and is also encapsulated [32]. A liposarcoma can be distinguished from a lipoma by its display of heterogenous echotexture, large size or greater that minimal color Doppler flow. A lipoma may be distinguished from an angiomyolipoma by the former's lack of posterior acoustic shadowing on ultrasound [30]. Thin fibrous septations may be present in 11 % of cases eco [33].

The MRI is highly sensitive in characterizing typical features associated with well-differentiated liposarcoma and highly specific in diagnosing simple lipoma [34]. with MRI pulse sequences a lipoma demonstrates homogenous signal intensity similar to that of fat: high T1 signal and intermediate T2 signal [36]. It saturates on fat saturated T1 and T2 sequences. Thin fibrous septa of low T1-weighted and T2- weighted signal intensity may be seen within the mass [31].

However, low grade liposarcomas may not be distinguished from benign lipomas based on imaging alone. Therefore, histological confirmation may be necessary. It is noteworthy that imaging features of lipomas can be similar to well differentiated liposarcomas. Presence of imaging features such as thick enhancing septa, presence of nodular and/or globular, or non-adipose mass like areas and decreased percentage of fat within the lesion are suggestive of malignancy [35]. A lipoma cannot be distinguished from an angiomyolipoma on CT and MRI, as the latter will also display imaging features of macroscopic fat and rarely calcification. Histological differentiation is required [31]. If the imaging of bones is not shown on MRI, teratoma should not be considered. Nephroblastoma would be excluded is MRI shows intact kidneys [20].

Lipoma will demonstrate homogenous signal intensity identical to fat in all pulse sequences. The thin fibrous septa will show low signal intensity on T1 and T2 weighted images [31].

As regards the treatment of intraperitoneal lipomas, all authors share the same opinion - it should be surgical [10,18,27]. Technically, intraperitoneal lipomas, particularly lipomas of the greater omentum, are easily removed. Tumor malignization is not common, therefore

the excision of the mass is recommended and in case of torsion - omentectomy alongside with the excision of the mass. [10,21,24-26]. Because of the lack of published reports, the long-term behavior is not well known in children [4,37] and a long term fallow up is advised [33]. The rate of reoccurrence after complete surgical resection is 5 % [8].

Although the "open" surgical approach is considered gold standard in this pathology, there is evidence that the laparoscopic approach remains an option. In 2015, Furukawa et al. documented the first laparoscopically resected omental tumor. Even though the patient was an adult one and the tumor was found to be a lipoblastoma of the greater omentum after the histology examination, the operation was a success. The patient suffered minimal blood loss throughout the surgery, started oral intake in day 1 and was discharged in day 4 after the procedure [38].

The embolization through interventional radiology of the main vessels that ensure blood supply to the tumor is documented only in adult patients. Spontaneous symptomatic hemorrhage from omental lipoma is rare and there is no mention in the literature of omental hemorrhage in pediatric patients [30]. Supraselective embolization in adult patients that present with bleeding from the omental lipoma is still under consideration. In 2018, Tirukonda., *et al*. reported three patients with omental lipomas, out of which two underwent supra-selective embolization with favorable outcome. One of the conclusions of these case reports was that definitive management of a symptomatic omental lipoma includes surgical resection [30].

Conclusion

Due to unspecific clinical findings, an abdominal lipoma is an accidental discovery. In our patient, the association with mesial sclerosis was unexpected and required specific treatment.

The surgical treatment was successful and the recovery uneventful. The MRI is a good diagnostic tool, especially on soft tissue tumors, but with limited specificity regarding its location. There is no significant biological marker in diagnosing a mesenteric lipoma.

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