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CASE REPORT

Chylous ascites in infants: Case report

Lisiane do Bomfim[1], Jussara Silva Lima[2], Gisele Scandiuzzi Moreira Netto[3]

Keywords:
child,
cough,
respiratory infections,
whooping cough.

Abstract

Objective: To evaluate the clinical and epidemiological wooping cough/pertussis in a pediatric hospital. **Method:** Series of cases that were studied all patients with wooping cough hospitalized at the Institute of Pediatrics Martagão Gesteira of Universidade Federal do Rio de Janeiro (UFRJ) from May 2011 until August 2012. Were included patients with paroxysmal cough and signs of severity that required hospitalization and excluded patients whose records were incomplete. **Results:** Of the 38 cases of wooping cough analyzed, nine were suspected pertussis cases, and of these, six met the criteria for clinical confirmation of pertussis. The deaths occurred in young infants who were clinically confirmed cases of pertussis, according to the Ministry of Health-Brazil. **Conclusion:** A suspect case definition of pertussis followed confirmation early clinical favoring early institution of appropriate treatment and avoiding unfavorable outcomes.

[1] Pediatrics Resident Physician.
[2] PhD - Pediatrician at the Maternal and Child Department of the Federal University of Triângulo Mineiro (UFTM), Uberaba, Brazil.
[3] Physician - Pediatrician at the UFTM Clinics Hospital, Uberaba, Brazil.

Correspondence to:
Lisiane do Bomfim.
Federal University of Triângulo Mineiro Teaching Hospital, Brazil. Av. Getúlio Guaritá, nº 330, Nossa Sra. da Abadia.
Uberaba - MG. Brazil. CEP: 38025-440. E-mail: lisi.bomfim@gmail.com

INTRODUCTION

Chylous ascites is the extravasation of chyle into the peritoneal cavity and is a rare condition in infants. It is predominantly idiopathic. Congenital chylous ascites is reported as inadequate drainage of lymph, resulting from a defect in the development of intra-abdominal lymph ducts[1-3]. The objective of this article is to describe the case of an infant with chylous ascites, the handling of the diagnosis, and the proposed treatment.

CASE REPORT

A female infant, 2 months and 20 days old, had a history of abdominal distension and vomiting for 1 month and was referred to our hospital from another institution. The accompanying adult reported that the abdominal enlargement had been progressive through the last month, without any change in bowel habits. Although the infant vomited milky and sparse content after meals, she accepted food normally, with no other complaints.

On arrival, the following observations were noted: round and tympanitic abdomen, without visceromegaly, painless on palpation, with a large inguinal hernia; normal cardiovascular and respiratory systems; and normal development for age (weight and stature at Z-score +1 according to the WHO curve), without any other changes Figure 1.

The child resulted from an individual pregnancy without complications, was born preterm at 36 weeks, in another institution, with infectious screening without changes, and was vaginally delivered, without the need for interventions at birth. She was discharged after 2 days of delivery with good progress and was exclusively breastfed.

Vaccination was up to date, according to the national immunization program. Initial tests (complete blood count, electrolytes, liver function, kidney function, and albumin) indicated only leukopenia with lymphocytosis. There was no evidence of congenital infection (negative serology). Abdominal ultrasound showed large-volume ascites, without liver or spleen changes. An echocardiogram showed a 6.1-mm interatrial communication with hemodynamic effects, but we decided on expectant management.

Abdominal computed tomography (CT) showed no structural changes, and thoracic and abdominal MRI showed no thoracic duct changes. Barium enema was normal. In this case, we decided to perform an abdominal puncture and drained a total of 630 mL of a milky liquid. Its biochemical analysis showed 2,310 cells/mm^3, with a predominance of lymphocytes (88%), and 6,720 mg/dL of triglycerides. This result led to the hypothesis of chylous ascites. As there were no apparent lesions, the suggested etiology was an immature lymphatic system.

The management and conduct were established after discussion with the departments of pediatrics, pediatric surgery, and radiology. The proposed diet was pumped breast milk



Figure 1. Infant, 2 months and 20 days old, with abdominal distension and subsequent diagnosis of chylous ascites. Source: the author.

mixed with medium-chain triglycerides (MCTs). Octreotide was initially introduced at 0.5 µg/kg/h and then increased to the full dose of 5 µg/kg/h.

The patient was hospitalized in a pediatric ward, with a proposed daily assessment of the abdominal perimeter in order to schedule a new paracentesis, with satisfactory progress. On the 12th day of hospitalization, the patient presented central cyanosis, hypothermia, and worsening of overall health status, with suspected sepsis. Infectious screening was performed, and the patient was transferred to the Pediatric ICU. Blood culture was positive for *Enterobacter aerogenes*. The patient presented leukopenia (2,040 leucocytes/mm^3) and increased C-reactive protein levels.

A new paracentesis was performed, wherein 360 mL of liquid, with 2,060 cells/mm^3 (with a predominance of

lymphocytes) and 4,580 mg/dL of triglycerides, was drained. Antibiotics were prescribed, with a good response. After 22 days in the ICU, the patient returned to the pediatric ward, with improved vital signs and clinical stabilization. During hospitalization, the abdominal perimeter remained constant.

The patient received octreotide for 40 days and was continued to be given pumped breast milk mixed with MCTs. She was discharged after 40 days of hospitalization and was referred for follow-up at our institution and continued to be breastfed. She had a follow-up visit 2 months after hospital discharge, with maintenance of the abdominal perimeter, good neurological development, and no complications during the follow-up period.

DISCUSSION

Lymph is produced in the lymph vessels of the small intestine, through the metabolites resulting from fat intake. Its basal production rate is 1 mL/kg/h, and in children, it can reach a maximum of 200 mL/kg/h, depending on the amount of ingested fats[1]. Chylous ascites is defined as the presence of a macroscopically milky liquid in the abdominal cavity, with a lipid component in triglycerides higher than 200 mg/dL, specific density over 1.010, total proteins from 2.5 to 7 g/dL, and alkaline pH[1]. The most frequent cause of Chylous ascites is lymphatic obstruction, which can be congenital, acquired, or idiopathic[1].

Chylous ascites is a rare condition that can occur at any moment in life. Primary chylous disorders are usually caused by primary congenital dysplasia, whereas secondary disorders are caused by neoplasms, trauma, inflammation, or abdominal surgery[2,3].

Primary chylous ascites is very unusual, but there are no established studies and data. The onset of ascites depends on genetic and environmental factors[2].

Paracentesis is not only used for diagnosis but also for therapeutic management. Chyle is usually colorless, but its appearance may depend on multiple factors, such as particles, cells, and diet[4]. Lymphangiography is the gold standard for defining the cause of lymphatic obstruction. Lymphoscintigraphy can also be used to assess the patency of lymphatic vessels[2,4].

Treatment is primarily based on diet management. The administration of a diet based on MCTs is accepted because it has been shown to reduce the production of peritoneal fluid[4]. It is believed that the reduction in dietary long-chain triglycerides reduces lymph flow and pressure in the vessels[5].

If there is no improvement with the administration of an MCT-based formula, total parenteral nutrition (TPN) can be indicated. The mechanisms of resolution using TPN are not well established, but they involve the maturation of the lymphatic system during the course of TPN. In described routines, symptoms have improved with the combined use of TPN and MCT-based diet[5].

Many case reports have demonstrated the effectiveness of using somatostatin analogs, such as octreotide, in reducing lymph production. There are several reports of successful use of somatostatin in newborns with chylothorax and chylous ascites after transplants and Kasai procedures. The mechanism by which somatostatin reduces lymphatic drainage is not completely understood.

It is believed that it decreases the absorption of fats, lowers triglycerides in the thoracic duct, and reduces lymphatic flow in most lymph channels[4]. It is known that somatostatin inhibits the secretion of some pituitary and gastrointestinal hormones, thereby increasing splenic arteriolar resistance, decreasing gastrointestinal flow, and consequently lymphatic flow.

The following side effects are related to a reduction in motility and intestinal secretion: hypertension, malabsorption, nausea, flatulence, hepatic dysfunction, and hyperglycemia. During somatostatin use, periodic monitoring of liver function, blood sugar, and thyroid function is recommended[6,7].

Studies have recommended the conservative treatment as mentioned herein, but in some cases, surgery can be selected. Surgery is recommended when conservative treatment fails, after 1 to 2 months of trying. The success of surgery depends on finding the location of lymph extravasation[4]. Success has been reported in more than 80% of cases, when the drainage site had been macroscopically identified[4].

In the present case, the patient benefited from the administration of breast milk mixed with MCTs and somatostatin analogs. There was no need for surgery. The patient maintained her abdominal perimeter after the second paracentesis, with no need for further drainage. On follow-up, her abdominal perimeter was within the limit for her age, without clinical decompensation. We believe that chylous ascites improved due to maturation of the lymphatic system combined with clinical treatment.

Chylous ascites is still a rare condition with no established treatment. Once its mechanism is better known, a treatment algorithm should be used uniformly by several care centers.

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