Spontaneous Chylous Peritonitis*

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THE OCCURRENCE OF chyle in the peritoneal cavity may be acute or chronic in nature. The chronic form is usually the result of widespread neoplastic involvement of the thoracic duct, and may be associated with chylothorax. When neoplastic disease is the etiologic agent, the condition is usually terminal in character, and aspiration of the body cavities is performed as a palliative measure only. Tuberculous mediastinal or retroperitoneal lymphadenitis can produce a similar picture of chronic chylous effusion. When tuberculosis is the cause, and this is usually so in infants and young children, frequent aspirations over a long period of time may effect a cure, if the tuberculous infection regresses (Zeisel[28]). In 1902, Pagenstecher[19] reported the case of a four-month-old child apparently cured by laparotomy. Ascites had developed without symptoms. Aspiration yielded 2300 ml. of chyle, which rapidly recurred. Three weeks later laparotomy was performed, at which time a large quantity of chyle was again removed. No abnormal pathologic condition could be found in the mesenteric lymph nodes. There were dilated lymph channels which resembled minute cysts on the mesentery and small bowel. The child made a complete recovery, without recurrence of the ascites.

In chronic ascites due to neoplasm or tuberculosis, the peritoneal fluid may have a chyloid appearance, and may be mistaken for true chyle. Microscopic or chemical examination is necessary for differentiation. Chyle contains fat globules which can be seen by the use of proper staining methods; on chemical examination, the fat content is high.

The sudden appearance of free chyle in the peritoneal cavity can be due to (1) trauma; (2) a complication of intestinal obstruction, either within the general peritoneal cavity or in a hernial sac; (3) the rupture of a mesenteric chyle cyst or lymphangioma; and (4) the spontaneous rupture of a lymph channel.

A number of cases of traumatic chylous ascites have been reported. In 1921, Guldmann[9] reported the case of a patient operated upon after an injury to the abdomen. At operation, chyle was seen exuding from a tear in the mesocolon. The laceration was sutured, and complete recovery ensued. Hansen,[10] in 1923, reported the case of a patient who had previously been operated upon for calcified mesenteric lymph nodes, some of which had been removed. Following trauma, he developed abdominal symptoms. At laparotomy, chyle was observed flowing from a rent at the base of the mesentery. This was sutured, and the patient recovered.

In 1939, Davis[4] reported five cases of disturbance of the abdominal chyle system. In two of the patients free chyle was found in the peritoneal cavity. In one of these patients trauma may have been the cause. Two hours after eating a heavy meal, a 36-year-old female, trying to teach her child to walk, was lying on the bed with the child standing on her abdomen. Shortly thereafter she developed abdominal pain and the abdomen

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became distended and tender. At operation, in addition to the finding of free chyle in the peritoneal cavity, there was a bleb under the peritoneum on the outer side of the cecum and ascending colon. No tumor or enlarged nodes were found in the mesentery. An appendectomy with drainage was performed, and the patient made a rapid and complete recovery. If this case were due to trauma, the injury must have been minimal. It is possible that in some of the other cases reported as spontaneous chylous peritonitis, there may have been a slight injury which had passed unnoticed. On the other hand, it is significant that in the cases definitely due to trauma, reported by Guldmann[9] and Hansen,[10] lacerations of the mesentery and colon were found, with chyle flowing directly into the peritoneal cavity.

Levering,[15] in 1944, reported the case of a 35-year-old male who, two weeks prior to operation, had been in an automobile accident. At operation, 600 ml. of chylous fluid was aspirated from the peritoneal cavity. The mesentery of the ascending colon was whitish in color, as was the posterior parietal peritoneum. The appendix was removed, and the patient recovered. Three months later, he was again operated upon for intestinal obstruction due to adhesions. At this time there was no evidence of residual intraperitoneal or retroperitoneal chylous effusion.

In 1946, Button[2] reported a case of chylous ascites which had persisted for one year following trauma. A paracentesis was performed every two weeks. A cure was finally obtained by suturing the saphenous vein into the peritoneal cavity to permit drainage of the intraperitoneal chyle into the vascular system. The use of venous-peritoneal anastomosis was described by Morse[17] in 1912.

A number of cases of chylous peritonitis occurring during the course of intestinal obstruction due to band adhesions or volvulus have been reported. In 1934, Dimtza[6] described a case in which chyle was found in the peritoneal cavity at the time of operation for ileus due to band adhesions. The intestine was somewhat dilated, cyanotic, and edematous, but it was not gangrenous. Wyatt and Gross,[27] in 1940, reported the case of a six-day-old infant operated upon for intestinal obstruction due to malrotation of the cecum, transduodenal bands, and mid-gut volvulus. Ascites developed when the child was six weeks old. A roentgenogram of the abdomen showed an unusual radiolucent outlining of the liver, and the child was again operated upon. At this time, there was a chylous ascites due to ruptured lacteals caused by bands obstructing the bowel and mesentery. The adhesions were separated, and the child then made an uneventful recovery. Chylous ascites did not recur. It was now assumed that the unusual roentgenogram was due to the increased radiolucency of the fat-containing peritoneal fluid. Although a diagnosis of chylous ascites had not been made preoperatively in this particular case, this roentgenologic picture should be kept in mind.

Renner,[22] in 1910, and Prange,[21] in 1912, reported the finding of free chyle in large herniae in which strangulation of small bowel had occurred. Because of the stricture of the neck of the sac, there was no chyle in the general peritoneal cavity. Weber,[26] in 1934, reported the case of an infant with volvulus and a large amount of free chyle in the peritoneal cavity.

Mesenteric cysts containing chyle are not uncommon and, theoretically, could produce a chylous ascites by rupturing. Such an occurrence is rare. Dutton[7] reported a case of a chyle-containing mass in the mesentery which ruptured, but pathologic examination did not reveal the presence of any cyst wall. The patient, a 35-year-old female, experienced sudden severe pain in the abdomen, and vomited. On physical examination, the abdomen was tender and spastic. The signs were most prominent in the right lower quadrant. Examination of the blood revealed 12,400 white blood cells per ml:, with 84 per cent polymorphonuclear leukocytes.

At operation, free chyle was found in the peritoneal cavity. There was a mass the size of a grapefruit in the mesentery of the ileum. It was one-third full of chyle, which could be seen flowing out of a necrotic area at the upper pole. The cyst extended from the root of the mesentery to the bowel wall. A section of the cyst wall was removed for biopsy, and the edges of the necrotic area were marsupialized to the anterior parietal peritoneum. The cyst cavity was packed with gauze; this was removed gradually. Drainage continued for five weeks. The patient remained well thereafter. Pathologic examination revealed tissues compatible with the mesenteric layers, but no true cyst wall.

When chylous ascites occurs as an acute phenomenon, in the absence of trauma and with no cause to be found at operation, it must be considered spontaneous. Apparently the course of the disease is rarely complicated and it subsides rapidly. From the operative reports, one can assume that the original tear in the chyle ducts or cisternae was retroperitoneal and not directly into the free peritoneal cavity, as was described in the cases due to trauma. The chyle extravasates retroperitoneally and then perforates into the free peritoneal cavity at a point distant from the original laceration. Such a laceration would have a greater tendency to heal spontaneously than were the open lymph channel in direct communication with the free peritoneal cavity.

Most of the cases of spontaneous chylous peritonitis reported in the literature occurred in young adults, the greater number of whom were operated upon because of a diagnosis of acute appendicitis. This can be explained by the fact that the retroperitoneal extravasation of chyle is usually in the right lower quadrant. With but one exception, recovery was rapid and complete.

In 1942, Hernuss[11] reported a case of a patient not operated upon. This was a pregnant woman who developed ascites at term. She had a normal delivery, but in the postpartum period, peritoneal aspiration yielded chyle. Following paracentesis, there was complete disappearance of the ascites.

Golm,[8] Rosarius,[23] Cohen,[3] Synek,[25] De Planque,[5] Boerema,[1] Kleber,[14] and Davis[4] have each reported one case operated upon because of the diagnosis of acute appendicitis. Several of these patients had eaten a heavy meal shortly before the onset of symptoms. In all of them, chylous fluid was found in the free peritoneal cavity. In some of these cases, the authors described the finding of a white exudate in the retroperitoneal tissues, extending lateral to the cecum and occasionally infiltrating the cecum and the ascending colon subserosally. No cause for the pathologic condition could be found. Recovery was rapid and complete in these eight patients whether or not appendectomy had been performed or drains placed in the peritoneal cavity.

A number of cases have been reported in which the onset of the disease was somewhat different. In several of these patients, there were pathologic findings in addition to the chyle in the peritoneal cavity.

In 1887, Murphy[18] reported the case of a girl, 19 years of age, who developed swelling of the abdomen three weeks after an episode of chills. At operation, a large amount of chyle was found in the free peritoneal cavity. There were no enlarged mesenteric nodes nor other pathologic findings. Drainage was maintained for four days, and complete recovery followed. Although the fluid was not examined microscopically or chemically, it had the appearance of chyle. The rapid and complete recovery from the disease parallels that which occurred in the other reported cases.

Maier,[16] in 1940, reported a case in which the preoperative diagnosis of perforated ulcer or mesenteric embolus was made. This patient had had rheumatic heart disease with mitral stenosis and insufficiency. Physical examination revealed a boardlike abdomen with tenderness to the left of the umbilicus. At operation, the free peritoneal cavity contained 20 ml. of chyle which, upon

examination, was found to contain fat droplets but no organisms. The lacteals of the small intestine were distended. About 12 inches from the ileocecal valve, the mesentery was somewhat thickened and contracted, and covered with a milky exudate. No other pathologic condition was found, and a drain was inserted. Postoperatively, the patient developed distention and auricular fibrillation, but recovered.

Two cases have been reported in which the onset was characterized by swelling in the region of the left clavicle. In 1945, Stevenson and Frankel[24] reported the case of a 47-year-old female who developed faintness and discomfort, accompanied by swelling over the left clavicle extending down to the second rib. Fourteen hours later she had abdominal symptoms and a temperature of 101° F. The blood pressure in the right arm was 180 mm. systolic and 84 mm. diastolic. In the left arm it was 130 mm. systolic and 64 mm. diastolic. There was a thrill and a murmur one-half inch above the left clavicle. The thrill, murmur and swelling had practically disappeared by the following day. Because of the severe abdominal symptoms a laparotomy was performed, and free chyle in the peritoneal cavity, most marked in the right upper quadrant, was found. There were no other pathologic findings. A drain was placed in the suprapubic area; this was removed after five days. Complete recovery rapidly ensued. In 1951, Karp and Harris[13] reported a similar case. A 46-year-old woman developed pain and swelling in the left side of her neck. Forty-eight hours later, she complained of severe abdominal pain and nausea. Appendectomy had been performed 19 years previously. The right upper quadrant of the abdomen was rigid and tender. The white blood count was 20,800, with 87 per cent polymorphonuclear leukocytes. A diagnosis of acute cholecystitis was made, and a laparotomy was performed. There was a considerable amount of free chyle in the peritoneal cavity. The serosa of the upper part of the ascending colon, the hepatic flexure, and the proximal transverse colon was milky white. On the anti-mesenteric border a milky fluid appeared to run out into finger-like vessels, but it could not be traced to the mesentery. There were several acutely inflamed lymph nodes in the mesentery of the small bowel, but no thickening or fibrosis. Drains were placed in the subhepatic space, and the patient made an uneventful recovery. Microscopic examination of the peritoneal fluid revealed debris and fat globules. The presenting symptom of pain and swelling in the left clavicular area may be ascribed to extravasation of chyle along the retroperitoneal and mediastinal tissue planes prior to rupture into the free peritoneal cavity. Also of interest in these two cases was the predominance of chyle in the right upper quadrant of the abdomen, suggestive of a higher perforation than occurred in the other cases.

The one fatal case was reported by Papenberg[20] in 1932. The patient developed severe abdominal pain after consuming a large quantity of alcoholic beverages. He was not operated upon until the fourth day of illness, at which time the only finding was a large quantity of chyle in the peritoneal cavity. The patient died shortly after operation. Postmortem examination did not disclose any cause for the chylous effusion nor for the fatal issue.

The case we report here is one which fits into the general pattern of this pathologic entity in that the disease was spontaneous in occurrence and rapid and uneventful in its outcome.

CASE REPORT

S. B., #63132, a 25-year-old white female in her fourth month of pregnancy, was admitted to the Montefiore Hospital in New York City on September 15, 1953, because of abdominal discomfort of 24 hours' duration. Her past history was entirely irrelevant. Twenty-four hours prior to admission she had experienced a bloated sensation in the abdomen and diffuse gas pains, which subsequently localized in the right lower quadrant. There had

been no nausea or vomiting. Physical examination revealed a well-developed female who did not appear acutely ill. Her temperature was 99° F.; the pulse rate, 80 per minute; and the blood pressure was 110 mm. systolic and 60 mm. diastolic. The only significant physical signs were confined to the abdomen, which was soft and non-tender except in the right lower quadrant; there was tenderness and muscle spasm in that area. The uterus was enlarged to about the size of a four-month pregnancy, and there was some tenderness in the right fornix.

The white blood cell count was 18,000 per ml., with 58 per cent polymorphonuclear leukocytes; stab cells, 13 per cent; lymphocytes, 20 per cent; basophiles, 3 per cent; and monocytes, 3 per cent. Urinalysis was negative. A diagnosis of acute appendicitis was made, and operation was performed.

Under inhalation anesthesia, the abdomen was explored through a McBurney incision. Upon incising the peritoneum, about 400 to 500 ml. of milky white fluid was aspirated from the abdomen. The appendix was visualized and found to be normal. In order to perform a more extensive exploration, the incision was lengthened superiorly. The uterus was found to be the size of a four-month pregnancy, and the adnexae were normal. The stomach, liver, gallbladder, colon, and small intestines were examined. Within the mesentery of the ascending colon and extending beneath the serosa around the colon there was a milky white infiltrate. This was also found over the entire right retroperitoneal area, extending to the kidney. There was no evidence of either peritoneal or retroperitoneal inflammatory reaction. The posterior parietal peritoneum was incised in a number of places in a search for a ruptured chylous cyst or other possible source of the chyle. Nothing which could be considered the etiologic factor was found. The pancreas was normal. Two Penrose drains were placed lateral to the ascending colon in the retroperitoneal space, and the abdomen was closed in layers.

Culture of the peritoneal fluid showed no bacterial growth. The fat content was 3.95 per cent. Postoperatively, the blood serum amylase and lipase were within normal limits. Serum cholesterol was 152 mg./100 ml. Total blood protein was 5.10 Gm. per 100 ml., with 3.59 Gm. per 100 ml. albumin and 1.51 Gm. per 100 ml. globulin. A roentgenogram of the chest showed no pleural fluid. The drains were gradually removed, and the patient made a completely uneventful recovery. She was discharged from the hospital on the eighth postoperative day. She subsequently had a normal, full-term, spontaneous delivery.

SUMMARY AND CONCLUSION

1. A case of spontaneous chylous peritonitis occurring in the fourth month of pregnancy is reported.

2. The literature on the subject has been reviewed.

3. Spontaneous chylous ascites is an uncommon clinical syndrome, usually diagnosed as acute appendicitis. It is self-limited in its course, which is almost invariably uncomplicated.

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