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Treatment of neonatal abdominal cysts

By

J. Dénes, F. V. Lukács, J. Léb and Martha Bognár

Apáthy Children's Hospital, Budapest

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Intraperitoneal or retroperitoneal cystic structures in the newborn appear with a variable clinical picture and in the case of intra-abdominal cysts, surgery is performed mostly on an emergency basis. In such cases the exact preoperative diagnosis is difficult and is seldom made. With early laparotomy, extensive small bowel resection can usually be avoided. Retroperitoneal lesions are mostly of renal origin; in such cases, preoperative diagnosis is easy, being based on specific examinations.

In the year 1973, 5 newborns with an intraperitoneal or retroperitoneal cyst have been treated surgically. In this series, one infant died after resection of 90% of the small bowel.

Cystic changes in the abdominal cavity or the retroperitoneal space are rarely diagnosed preoperatively, since owing to some acute complication surgery is performed on an emergency basis. Most of the cysts are localized intra-abdominally and only few retroperitoneally. To the first group belong the ovarian tumours and cysts, mesenteric or omental cyst, haemorrhage or inflammation, or small bowel obstruction secondarily to volvulus. In the second group, different renal lesions such as congenital hydronephros and polycystic kidney have an active role and, although rarely, we may find a retroperitoneal teratoma or some cystic lesion. These conditions also require a surgical intervention, especially the teratomas, because of the high risk of secondary malignant transformation.

In 1973, we have operated upon 5 neonates in whom an intra-abdominal or retroperitoneal condition required surgical treatment. In 3 of these patients, surgery was performed on an emergency basis, and in the remaining two cases the suspicion of a retroperitoneal tumour led us to make specific examinations and then to perform an operation.

Case Reports

Case 1. H. T. a female baby weighing 2700 g was admitted to the Premature Babies Hospital soon after birth because of severe asphyxia. This was the 4th gravidity of the 22 years old mother, who had had an artificial and two spontaneous abortions. In her youth she had had hormone treatment for juvenile metropathy. She had had recurrent abdominal pain and metrorrhagia, which had given rise to suspicions of an ovarian cyst. The cyst was

later verified by laparoscopy, but she had not been operated upon.

The newborn's asphyxia was duly dealt with, but when she was 5 days old a nut-sized painful abdominal mass was palpated on the right side of the umbilicus. In the next few days the abdominal distention increased, then vomiting ensued with growing frequency. Finally, at the age of 11 days, signs of peritonitis were observed. The diagnosis was a tumour or a twisted ovarian cyst. At laparotomy a twisted and partly gangrenous ovarian cyst was found on the right side and oophorectomy was performed (Fig. 1). Histology revealed a simple dermoid cyst. Recovery was smooth.

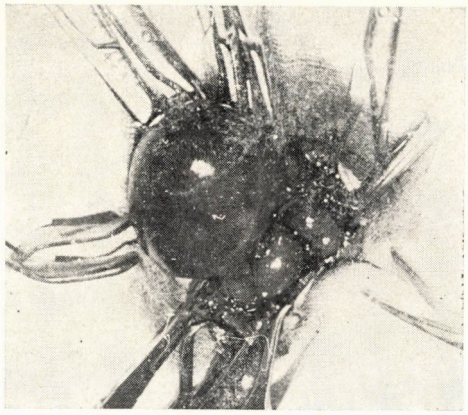

FIG. 1

Case 2. S. V., a female baby aged 2 days, of 3000 g birth weight, was admitted with the clinical picture of an incomplete small bowel obstruction. A mobile cystic abdominal mass was palpated in the mid-lower abdomen. After a few hours the obstruction became complete and plain X-rays showed distended bowels with fluid levels. At surgery, in the middle part of the jejunum a small apple-sized cyst was found; it was located on the mesenteric border and shared a common wall and blood supply with the adjacent jejunum. The whole small intestine was twisted round the cyst (Fig. 2). Segmental resection and jejuno-jejunostomy were performed. Histologic examination of the resected specimen (Fig. 3) revealed a genuine enteric duplication. The postoperative course was uneventful, from the 2nd postoperative day on the baby had spontaneous stools. When last seen 6 months after the operation, she was well and symptomless.

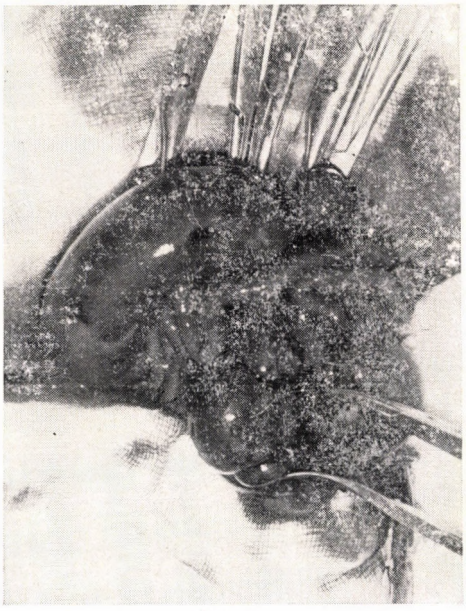

FIG. 2

Case 3. K. L., a 5-day-old girl of 3400 g birth-weight, was transferred to us from the obstetric ward of a country hospital. In the morning of admission she had 39°C fever, the abdomen was enlarged, she often vomited and passed blood-stained fluid repeatedly through the rectum. A plain X-ray film showed several distended small bowel loops with fluid levels. At laparotomy, a 4 × 4 cm mesenteric cyst was found in the upper part of the jejunum, and around it a volvulus of 360° had developed. Caudally, the small bowel was livid and almost completely collapsed, with a grave inhibition of its blood supply. The cyst was resected together with the adjacent jejunum and a side-to-side jejuno-jejunostomy was performed. However, after re-twisting the bowel remained pale and

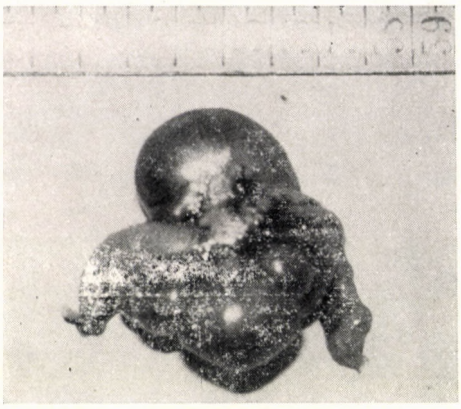

FIG. 3

peristalsis was feeble. The baby's condition was so grave that we could not take the risk of performing a subtotal small bowel resection, besides it was hoped that the vitality and function of the bowels will be restored spontaneously. Histologically the resected structure was a cystic lymphangioma of the mesentery.

In the next few days the abdomen was mostly distended but bowel sounds could be heard. From time to time prostigmine was administered intravenously, so the baby passed stools periodically. On the 4th postoperative day the abdomen became extremely distended and regurgitation increased. X-rays showed a distended small bowel with fluid levels, and relaparotomy had to be performed. A great amount of stenchy and turbid fluid was drained from the abdominal cavity. The small bowel was gangrenous along its whole length with a diffuse fibrinous coating. Only a 5 cm long jejunal segment below the former anastomosis and a 5 cm long terminal ileal loop seemed to be intact. Resection of the gangrenous bowel was performed and the continuity was restored by end-to-end anastomosis. There remained only an about 18—20 cm long small intestinal tract.

After relaparotomy, on massive antibiotic therapy and parenteral feeding the septic condition improved. From the 7th postoperative day on the baby passed spontaneous stools and then oral feeding was tentatively instituted with some infant pap diluted with skimmed breast-milk. The baby had 10—15 stools daily, but sometimes the stools stopped completely for an unpredictable period. At such times, repeated use of neostigmine was effective. From the 19th postoperative day it was tried to reduce the number of stools by feeding the baby with bananas and pulverized carob-bean and giving Dover's powder and we succeeded in obtaining occasional yellow, nearly normal stools. They were, however, mostly green, mucinous and watery, accompanied by a smaller or greater amount of vomitus. We succeeded in maintaining the baby's weight at her birth-weight of 3400 g, by high-calorie parenteral and 150—200 g/day oral feeding. Forty-two days after admission, however, with frequent vomiting the septic condition deteriorated and at 50 days the baby died. Post mortem revealed extensive fibrinous adhesions, bilateral pneumonia and septic degeneration of the parenchymal organs.

Case 4. B. C., A baby born with 3850 g, was admitted at the age of 3 weeks because of an abdominal tumour. In the right upper abdomen, a large fixed solid mass was palpated. Intravenous pyelography showed no excretion on the right side. Laboratory findings were normal. At laparotomy the large, non-functioning right hydronephrotic kidney was removed (Fig. 4). Postoperative course was uneventful and the baby developed well ever since. Histology revealed a markedly narrowed renal cortex and medulla and in the subcapsular area some tubules and Bowman's capsules showed cystic enlargement.

Case 5. I. A., a 3-week-old girl of 3500 g birth weight was admitted with a nut-sized, mobile mass in the left upper abdomen. The mass was first palpated when the baby was 3 days old. At the age of 2 weeks, intravenous urography revealed no excretion on the left side. At laparotomy a polycystic left kidney was removed (Figs. 5,

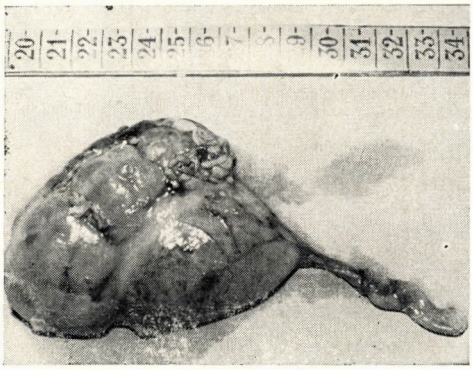

FIG. 4

FIG. 5

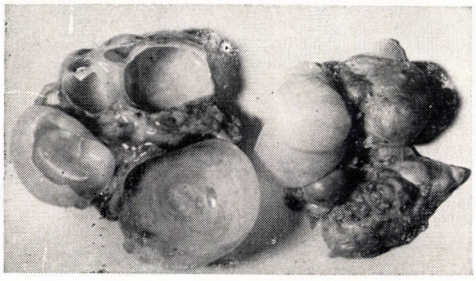

FIG. 6

6). Histology showed partly differentiated, partly undifferentiated kidney tissue embedded in loose fibrous connective tissue. Some primitive glomerular tissue was also present.

Ps. aeruginosa was cultured from the urine; this was easily eliminated by antibiotic treatment. Otherwise, the postoperative course was uneventful and when last seen 3 months later, the baby was well.

DISCUSSION

Intraperitoneal cystic changes are uncommon in the neonatal period and their preoperative diagnosis is seldom exact. Operation is mostly undertaken because of some complication caused by the cyst. This has been confirmed by several authors who each described one or two interesting cases [1, 2, 9, 10, 11, 12]. Then in 1965, GRISCOM [6] reported on 117 cases in less than 1-month-old infants collected during a 20-year period, but he reviewed the cases mainly from the X-ray diagnostic point of view. In this material there were 22 different intraperitoneal cysts. In 1972, 7 years later, CARLSON and GRISCOM [3], to complete the number of their own cases, collected 28 neonatal ovarian cysts from the literature. FAVARA et al. [5] reported on 37 enteric duplications, 14 of which were neonatal cases. In recent years, DAUM et al. [4] have reported on 9 cases, GROSFELD et al. [7] on 15 cases, while HOUSTON and LYNN [8] could find only 2 neonatal enteric duplications in the 16-year material of the Mayo Clinic. According to the different reports, surgical intervention was performed nearly without exception on an emergency basis, due to small bowel obstruction, and an exact preoperative diagnosis of intraperitoneal cystic lesion was infre-

quently made in young infants. In contrast to the abdominal cases, retroperitoneal cystic structures or malformations which are mostly of renal origin, are easily diagnosed preoperatively. Our cases described above have confirmed these facts in every respect.

The symptoms and signs caused by an intraperitoneal cyst or duplication are variable and uncharacteristic. In most of the cases acute symptoms develop, which require surgical intervention on an emergency basis. These are nausea, vomiting, increasing abdominal rigidity, absence of bowel sounds, leukocytosis, fever, and, eventually, signs of complete bowel obstruction or peritonitis. On the other hand, a retroperitoneal cystic or degenerative lesion may be diagnosed preoperatively by specific procedures such as intravenous urography, selective angiography, etc. In these cases the solid or cystic mass is almost always palpable, it grows slowly and causes no pain.

The only management promising success is a surgical operation, irrespective of whether an intestinal obstruction or a retroperitoneal lesion is in the foreground of the clinical picture. Right timing of the intervention is of major importance and for the sake of an uneventful postoperative period, careful fluid and calorie replacement and, if necessary, an effective antibiotic therapy is needed.

We have lost one patient out of five. This baby had been in a very grave condition and the intestinal obstruction had probably not been a fresh one. Therefore subtotal bowel resection was disregarded at first in the hope that the retwisted bowels will regain their normal peristalsis. That, however, failed to take place and at the second operation, 90% of the small intestine had to be resected. By this time peritonitis and septicaemia had already set in. The septic condition was irreversible and to ensure the necessary caloric intake was also difficult. Should we have taken the risk and had resected the bowel at the first operation, probably this infant could also have been saved. Later, oral feeding and the necessary caloric replacement would, however, have meant great difficulties. It is common that for many months after a subtotal small bowel resection the necessary intake must be ensured by fat-free and carbonhydrate-free food and cholestyramine has to be given to absorb the bile acids which cause diarrhoea. Complementary parenteral feeding is almost always necessary for months and a hypercaloric replacement through the caval cannula can neither beavoided until the remaining bowel has become elongated and the villosity hypertrophied.

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Dr. J. Dénes
Bethesda u. 3,
H—1146 Budapest, Hungary