

GALLBLADDER TORSION IN A CHILD DIAGNOSED BY ULTRASONOGRAPHY AND TREATED BY LAPAROSCOPIC CHOLECYSTECTOMY

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ABSTRACT

Gallbladder torsion is a very rare cause of acute abdominal pain. It usually occurs in elderly women, when the gallbladder twists around its mesentery. Contributory factors for this to occur are postulated to be an associated anatomical abnormality of the vascular pedicle to the gallbladder or the presence of an abnormally long mesentery from the gallbladder to the liver bed allowing it to float freely. Clinical symptoms are nonspecific, usually similar to biliary colic with acute onset of abdominal pain, nausea and vomiting. The absence of gallbladder stone with signs of acute cholecystitis on imaging findings can suggest a torsion of the gallbladder.

This disease is a life - threatening emergency that requires urgent cholecystectomy. However, cases of gallbladder torsion in children undergoing laparoscopic cholecystectomy are rarely reported nationally or internationally due to the uncommonness of the disease. We report a 3 - year - old child admitted to the hospital with symptoms of acute abdominal pain and vomiting. Ultrasonography demonstrate a distended gallbladder, with a multilayered wall, which contained no stones. Laparotomy was performed and the gallbladder was found to be twisted around its pedicle. Cholecystectomy was performed. After surgery, the child was stable and was discharged from the hospital after 5 days of treatment.

Key words: *Gallbladder torsion, laparoscopic cholecystectomy, acute abdominal pain in children.*

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I. INTRODUCTION

Acute abdominal pain is a common condition in children. However, torsion of gallbladder (GB) in the pediatric population is very rare [1]. It occurs when there is rotation of the gallbladder along the axis of the cystic duct and the vascular pedicle. The rarity of gallbladder torsion and the fact that its symptoms are similar to those of acute cholecystitis, make it difficult to diagnose preoperatively [1 - 3]. We report a case of a 3 - year - old girl whose gallbladder torsion was diagnosed preoperatively by ultrasound and clinical symptoms, treated by laparoscopic cholecystectomy. We also review the literature of the pediatric cases of gallbladder torsion.

II. CASE PRESENTATION

A 3 - year - old girl was admitted to our hospital because of constant increasing right upper quadrant abdominal pain for 4 hours accompanied with vomiting, no diarrhea. On admission to the hospital, the child had a low fever (38⁰ C), Murphy's sign (+), abdominal distention and right - sided abdominal tenderness without muscular resistance were noted upon the physical examination. She had an infective syndrome on laboratory investigations with raising of white blood cells (WBCs) 16.5 G/L (neutrophil 78%) and serum Procalcitonin 0.059ng/mL. A plain abdominal X-ray did not show any abnormality. An ultrasound scan of her

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abdomen was organized. This modality showed that the gallbladder was enlarged, thickening wall with some layers, and there was fluid around the gallbladder but no stones were found (**Figure 1**). With clinical symptoms and ultrasound images, the initial diagnosis was acute cholecystitis. However, no stones were seen and there was no

biliary duct dilatation. The gallbladder torsion was the final diagnosis by the multidisciplinary teams. She was treated by laparoscopic cholecystectomy. Laparoscopy was performed and revealed the gallbladder was partial necrosis with a clockwise torsion of more than 270 degrees at the cystic duct (**Figure 2**).

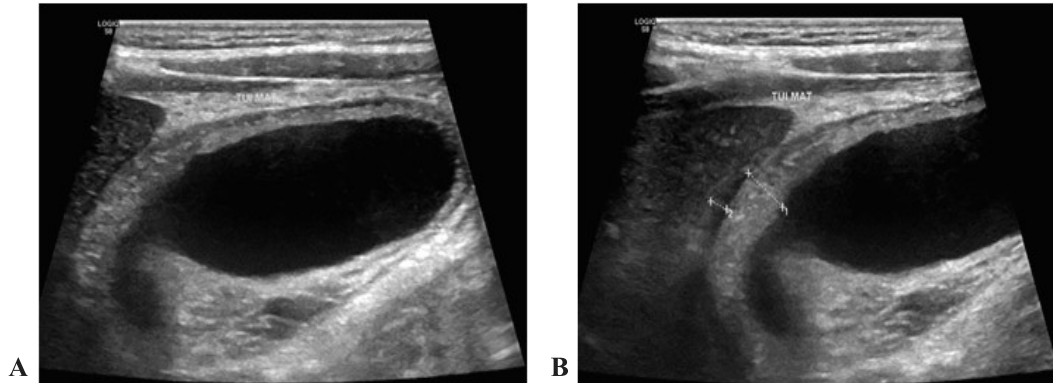


Figure 1: A. Ultrasonography showing a large wall thickening gallbladder without stones.
B. Small amount of fluid around the gallbladder.

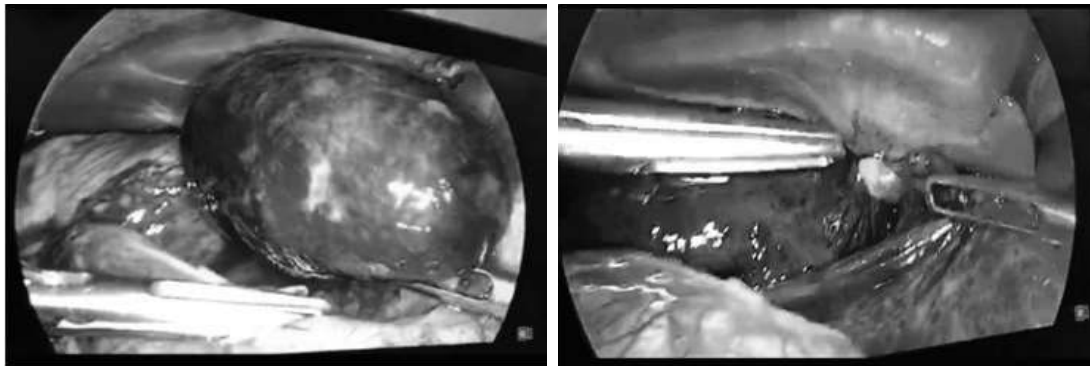


Figure 2: Laparoscopy revealed the gallbladder was lying over the greater omentum, appeared partial necrosis with a counterclockwise torsion of more than 270 degrees at the cystic duct.
After surgery, the child was stable and was discharged from the hospital after 5 days of treatment.

III. DISCUSSION

Torsion of gallbladder was first described by Wendel in 1898, is uncommon condition, with not many cases reported in the literature, especially in children [1, 2]. It can occur in all age groups, with the highest incidence in elderly women, and a female - to - male ratio of 3:1 [3, 4]. The youngest reported case was of a 2 - year - old child, but the peak incidence appears to be in children between 6 and 13 years of age [5].

The causes of gallbladder torsion are controversial.

Gallstones are unlikely to be the cause because they are not uniformly present in all patients reported with torsion. Gallbladder torsion in children may be the result of a congenital anatomical predisposition that exists in 4% of the population [1, 5 - 7].

Because volvulus of the gallbladder is a relatively uncommon phenomenon with nonspecific symptoms, preoperative diagnosis of gallbladder torsion remains difficult. Therefore, most cases are diagnosed intraoperatively at present. The challenge is to correctly identify this unusual cause

of abdominal pain that is commonly misdiagnosed [7, 8]. Nakao et al reported that only 9.8% of all gallbladder torsion cases (pediatric and adult) could be diagnosed preoperatively [9]. The differential diagnoses that should be considered for right upper quadrant abdominal pain include acute cholecystitis, intussusception, intestinal volvulus, and appendicitis as well as GB torsion [8 - 10].

Diagnostic imaging includes ultrasound, radiographic studies, CT scan or abdominal MRI are useful but commonly unspecific. Radiographic study does not help in diagnosis of gallbladder torsion but can be used in other situations. Ultrasound studies is the first choice in the cases with acute abdominal pain in children. Abdominal sonography often reveals a large floating gallbladder without gallstones, and a thickened gallbladder wall. Specific ultrasound signs seen with gallbladder torsion include the presence of the gallbladder outside its normal anatomic fossa but it is really rare seen. Additionally, CT findings and MRI findings are also nonspecific [1, 3, 4, 11]. In some cases, MRCP revealed anatomic details of the neck of the gallbladder and cystic duct [10]. In our case, abdominal ultrasound was used as unique imaging modality. The findings were nonspecific for gallbladder volvulus and were diagnosed as cholecystitis at the first ultrasound. The child was treated as cholecystitis for 24 hours but the symptoms were not decreased. At the second time of abdominal ultrasound, the findings were more clearly and still not seen the gallstones. So the torsion of gallbladder was diagnosed at that time when radiologist discussed with the pediatric surgeon. The distinction between torsion and cholecystitis is really important, because of their different managements. Cholecystitis can be treated conservatively initially but gallbladder torsion requires surgical interventions as soon as possible for good outcome as this prevents the complication of perforation and the attendant bilious peritonitis [1, 11, 12].

Also, laboratory evaluations are often nonspecific. For example, white blood cell count (WBC), C - reactive protein (CRP) and pro calcitonin are frequently elevated, laboratory data may reveal nonspecific inflammatory changes, while liver function tests are commonly normal. In

our case, WBC, CRP and procalcitonin were mild elevated which support to the cholecystitis but not excluding GT [5, 6, 7].

Considering our cases and the review of literature, some recommendations can be draw. We should be kept in mind that one of the causes of upper quadrant abdominal pain is GT. Some findings can be found on ultrasound or other imaging modalities as distended gallbladder with wall thickening, no stone or no impacted stone causing occlusion, floating gallbladder, cystic duct to the right of the gallbladder. As the diagnosis is done or suspected, surgical treatment is mandatory and urgent [11 - 13].

IV. CONCLUSION

Although gallbladder torsion occurs more rarely in children than in adults, it must be considered in the differential diagnosis of an acute abdominal pain. So it is important to undertake prompt diagnosis while keeping GT in mind. Gallbladder torsion is a rare disease, which is still difficult to preoperative diagnosis despite advances in diagnostic imaging. Laparoscopic cholecystectomy for GT could be a safe and effective surgical procedure, even in pediatric patients. The diagnosis of GB torsion with ischemia is rare, a delayed or missed diagnosis will contribute to increased morbidity and mortality.

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