Case Report

Peritonitis by Perforation of the Gall Bladder of Typhoid Origin in Children

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Abstract

Peritonitis by perforation of the gall bladder of typhic origin is a rare condition. In Côte d'Ivoire, no studies to our knowledge have addressed the vesicular complications of typhoid fever in children. The aim of this work was to describe the epidemic-clinical, therapeutic and evolutionary aspects of the perforation of the gall bladder of typhic origin in subjects under 15 years of age. In 6 years, five children showed a vesicular perforation of typhic origin or 9.4% of peritonites of typhic origin. They were 5 boys with an average age of 07.4 years 5–11 years. The children were from low socioeconomic backgrounds. No history was noted. Clinical examination revealed peritoneal syndrome. X-ray of the abdomen without preparation carried out in all children had objectified a diffuse greyness. Leucocytosis was present in all cases. Treatment in all children initially consisted of resuscitation and antibiotic therapy with the 3rd generation cephalosporin and an imidazole. Surgical exploration revealed gangrene and perforated gallbladder without damage to other organs or the presence of stones. A cholecystectomy was performed. The following procedures were simple in 4 patients. A patient died of sepsis following postoperative peritonitis by biliary fistula. Perforation of the gall bladder of typhic origin is rare in children. It is usually discovered at the stage of peritonitis. The treatment combines antibiotic therapy and cholecystectomy. Systematic screening should reduce the progression to this complication.

Keywords: Biliary perforation, gall bladder, peritonitis, typhoid fever

Introduction

Typhoid fever is a common, endemic infection in developing countries.[1] This condition is due to poor hygiene conditions and low socioeconomic status. According to the WHO in 2018, there were an estimated 11–21 million cases of typhoid fever and approximately 128,000–161,000 deaths annually.[1] Intestinal perforation remains the main digestive complication,[2,3] with morbidity and high mortality 2. It usually sits at the level of hail. It is the second cause of acute peritonitis in children after the appendicular origin according to several authors.[4] Acute cholecystitis is a rare complication of typhoid fever and the occurrence of a gall bladder perforation is extremely rare.[5,6] As it is rarely mentioned because of the absence of specific signs, its diagnosis will be made only in per operative.[5,7] In Côte d'Ivoire, where the endemicity of typhoid fever remains, a study was conducted on typhoid hail perforations in children,[3] but no study on vesicular perforations due to typhoid fever was undertaken. The aim was to describe the epidemic-clinical, diagnostic, therapeutic, and evolutionary aspects of this complication.

Patients and Method

This is an observational study with retrospective data collection over a 6-year period (January 2015–December 2020). He identified 5 children with vesicular perforation of bile of typhoid origin. The parameters studied were: age, sex, consultation time, history, typhoid fever vaccine status, preoperative diagnosis, radiography and biological assessment, the appearance of the gall bladder, the presence or absence of ileal perforation in intraoperative and evolution. The diagnosis

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was made on the basis of blood culture, showing Salmonella typhi or a clinical picture of typhoid fever associated with serology Widal and Felix titrated positive for Salmonella typhi O and S. typhi H but negative for *Salmonella paratyphi*. All children had a laparotomy with cholecystectomy.

Results

During this period, 53 cases of peritonitis of typhic origin were collected. It represented 8.6%. They were 5 boys, average age 07.4 years 5–11 years. The average consultation time was 10 days 7–15 days [Table 1] no child was vaccinated against typhoid fever. None of the children had any particular background. These children came from unfavourable socio-economic backgrounds. They all had fever and abdominal pain. The main clinical signs are summarised in Table 2. X-ray of the abdomen without preparation showed a diffuse abdominal greyness without pneumoperitonene in all children. No ultrasound was performed. The biological impact assessment showed a predominantly polynuclear neutrophil leucocytosis (12560–23587) in all cases, anaemia and thrombocytopenia were present in three cases. Hydroelectrolyte disorders were present. The diagnosis of generalised peritonitis by ileal perforation had been mentioned in all pre-operative children. Hydroelectrolyte resuscitation was performed in all patients before surgery. In surgery, a gangrene and perforated gall bladder was observed in three cases, and a lack of stones [Figure 1]. The location of the perforations is summarised in Table 1. The exploration of the abdomen did not reveal any lesions of handles, especially at the level of the hail, but we observed multiple mesenteric lymphadenopathies. Samples of the peritoneal fluid for cytobacteriological examination did not allow find germs. Evolution after cholecystectomy was favourable in four patients. A child presented with deep suppuration with a biliary fistula that required a surgical resumption. The patient died in a state of sepsis. Anatomopathological examination of the surgical parts [Figure 2] revealed no malignancy. Antibiotic therapy with Ceftriaxone and metronidazole was introduced in all children for the duration of the hospitalisation which was on average 7 days [7–10 days]. At the 6-month decline, no complications were noted.

Table 1: Period consultation, gallbladder condition

Cases	Age (years)	Period consultation (days)	Gallbladder conditions
1	10	07	Perforation of gallbladder
2	11	10	Gangrenous and perforated gallbladder
3	06	11	Gangrenous and perforated gallbladder
4	05	15	Perforated neck
5	05	07	Multiple perforation of gallbladder

Discussion

Peritonitis by vesicular perforation of typhic origin is rare and especially in children. In our unit, we observed in 6 years (2015–2020) that 5 cases, which is similar to the studies of some authors on the rarity of this complication.[5,7,8] This complication could occur in vulnerable groups, including children, who are most at risk.[1] Many risk factors would favour this infection or complication, namely populations without access to drinking water and inadequate sanitation services, poor populations.[1]

The clinical picture of peritonitis by ileal perforation during typhoid fever is frequently encountered in our context.[2,4] Gall bladder involvement during this infection is due to the ability of Salmonella to invade epithelial cells, causing damage to the wall of the epithelial cell, which may lead to perforation.[6] There is no specific presentation[5,7,9] and the diagnosis is generally not done in preoperative,[7,10] which makes all the difficulty. Peritonitis by vesicular perforation of typhic origin appeared to us more probable considering the following arguments: the frequency of this condition in our region, clinical symptomatology, sero-diagnosis of WIDAL

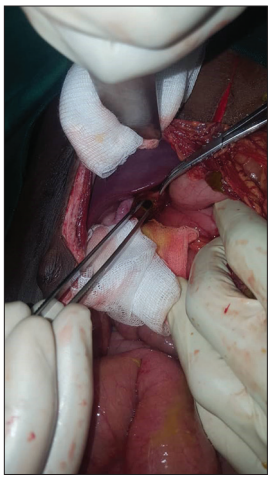


Figure 1: Gangrenous and basally perforated gallbladder



Figure 2: Surgical specimen

Table 2: Clinical symptoms

Patient	Signs		
	Functional	General	Physical
1	Abdominal pain Food vomiting Stopping of stool and gases	Infectious facies Everage general condition Fever 38°7 Absence of jaundice Pulse: 98 pulses/min Polypnea	Abdominal distension Ombilical cry Defense of the abdomen
2	Periumbilical pain Food vomiting Stopping of stool and gases	nfectiousfaies Bad general condition Subictere Fever 39°C Pulse: 120 pulses/min	Ombilical cry Contracture of the abdomen
3	Abdominal pain Bilious vomiting Stopping of stool and gases	Infectious facies Bad general condition Absence of jaundice Fever 38°5C Pulse: 100 pulses/min	Ombilicical cry Defense of the abdomen
4	Periumbilical pain Bilious vomiting Stopping of stool and gases	Infectious facies Bad general condition Subictere Fever 39°C Pulse: 110 pulses/min	Ombilical cry Contracture of the abdominal
5	Diffuse abdominal pain Food and bilious vomiting Stopping of stool and gases	Infectious facies Bad general condition Absence of jaundice Fever 37°9C Pulse: 96 pulses/min	Ombilical cry Defense of the abdominal

positive and the perioperative findings, this aetiology seemed more likely to us. However, other aetiologies could have been mentioned in particular the biliary lithiasis which remains common.[11]

Surgical exploration revealed gangrene and perforated gallbladders which could be explained by the severity of the infection. Cholecystectomy is the treatment of choice with good results.[5,7] Fluoroquinolones in the 1st line or cephalosporin in the 3rd generation would be choices in the treatment of these cases.[12] In our study, we used 3rd generation cephalosporins because fluoroquinolones are contraindicated in children. Duration of antibiotic therapy in complicated forms of typhoid fever is consistent with literature duration of 7–14 days depending on patient status.[7,12]

The mortality rate is high.[7] Morbidity and mortality are believed to be related to delayed diagnosis.[7] Our case of death was due to peritonitis by biliary fistula. After reintervention, the patient died in a context of septic shock. However, the seriousness of this condition would stem from the association of several factors of poor prognosis, including the toxicity of bile effusion, superinfection by often multiple germs.[11]

Conclusion

Perforation of the gall bladder of typhic origin is rare in children. It is usually discovered in the stage of peritonitis. The treatment combines antibiotic therapy and cholecystectomy. Routine screening and vaccination of at-risk patients should reduce the progression to this complication.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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