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Acute cholecystitis from typhic origin in children

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ABSTRACT

Background: To evaluate the particularities of typhoid cholecystitis in children. **Materials and Methods:** This was a 5-year prospective study of typhoid cholecystitis in children under 15 years old at Djougou and Sylvanus Olympio teaching hospital. The diagnosis of typhoid cholecystitis was based on clinical and investigation findings, confirmed by operative findings at cholecystectomy. **Results:** Six children with typhoid acalculous cholecystitis were treated over a five-year period (4 males and 2 females). Their ages ranged from five to 13 years (median 8.8 years). The mean duration of symptoms was six to 21 days. The clinical signs were fever, abdominal pain, which predominated at the right upper abdominal quadrant, and type II Hackett splenomegaly. The diagnosis was confirmed by a positive Widal's test and Salmonella typhi isolation from the culture in all patients; four patients had ultrasound evidence of acalculous cholecystitis. Open cholecystectomy was successful in the six cases. The operative findings were gangrene (3), perforation (2) and empyema (1). All the patients made an uneventful recovery, and have remained symptom free one and three months on follow-up. **Conclusion:** Typhoid acalculous cholecystitis is a frequent complication in children. Late presentation and diagnosis is associated with complications. Cholecystectomy in association with antibiotic is the treatment of choice.

Key words: Bénin, children, Togo, typhoid cholecystitis

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INTRODUCTION

The typhic cholecystitis is a complication of the typhoid fever. It is rare in adult, but frequent in child.[1,2] Its frequency had been estimated at 0.6% by Ayité and al. in Togo.[3] Typhoid fever is general digestive toxic infections caused by salmonella enter bacteria. It is still the important morbidity and mortality source in the world.[4] Endemic and epidemic regions are Africa, Asia and Latin America.[4,5]

The treatment of the typhoid cholecystitis can be medical (anti-biotherapy) when there is early diagnosis. The diagnosis is often made at the complication stage because of the fast evolution in the child, and the treatment is surgical associated with anti-biotherapy. From six cases managed for typhoid cholecystitis, we would like to emphasize the particularities of the cholecystitis in the child.

MATERIALS AND METHODS

This is a prospective and descriptive study during five years (from January 2006 to December 2010) that took place at the "Ordre de Malte" Hospital of Djougou (Bénin) and the Sylvanus Olympio Hospital (Lomé-Togo). These hospitals did not have coeliosurgery unit. Widal and Felix agglutination reaction, stool culture and blood culture were possible except the weekends and non-working days. This study was conducted on patients less than 15 years of age.

The diagnosis of typhoid cholecystitis was clinical (fever, loose or local peritoneal irritation), investigations (both positive Widal and Felix agglutination reaction and stool culture and eventually a biliary vesicle ultrasound) and confirmed by median laparotomy with cholecystectomia (gangrenous or perforated biliary vesicle with necrotic sides and absence of calculus of vesicle).

RESULTS

The average age of the patients was 8.83 years (ranges: 5 to 13 years).

The disease began by various signs [Table 1].

The stool culture was not done in three patients. In three patients, it was positive. In these cases, the diagnosis was based on the clinical signs, Widal and Felix agglutination reaction and on the anatomopathological aspect of the biliary vesicle (acalculous cholecystitis).

The Figures 1 and 2 shows the anatomopathological aspect of the gallbladder: Gangrenous [Figure 1] and perforation [Figure 2].

The intra-operative aspirate from the gallbladder was not made in the patients.

The histological feature was done in four patients and confirmed the acalculous cholecystitis, the hypertrophy of the biliary vesicle and a thickening of its walls.

Table 2 summarizes up the epidemiological, diagnostic and therapeutical characteristics of the patients.

DISCUSSION

The typhoid fever is a systematic infection caused by four species of salmonella: *Salmonella typhi* and Salmonella *paratyphi A, B* and *C*. They can be transmitted directly, but mostly it is indirectly by food or contaminated water. The salmonellas can infect many organs such as the biliary vesicle.[3,6]

The typhic cholecystitis is a secondary complication from the salmonella virulence or from their resistance to treatment often known in endemic areas and with patients who have spent some days in these areas. This infection feature can be preceded by a gastro-enteritis or a septicaemia.[4,5] Some other germs can cause an acute cholecystitis at a variable rate. Capoor and al. in India [7] found *Escherichia coli* at 29.7%: *Klebsiella pneumonia* at 27%, *Citrobacter freundii* at 8.1%, *Salmonella enteric serovar Typhi* at 8.1%.

Table 1: The beginning signs in the patients before arriving at the hospital

	Number
Fever + vomiting + diarrhoea	2
Fever + vomiting + diarrhoea + insomnia	1
Headaches + fever + vomiting + diarrhoea	1
Headaches + fever + vomiting + abdominal pains	1
Headaches + fever + insomnia + polyarthralgia	1
Total	6

After the ingestion, the bacilli migrate through the intestine and infect the mesenteric nodes and then they get into the blood stream and the various cellular tissues. Menendez *et al*.[8] proved that the bacteria had a tropism for the epithelium of the vesicular wall. They get its wall, multiply themselves and stay there. A destruction of the epithelial mucus characterizes the infected vesicle. This can be explained by the multiplication of the salmonellas, a massive infiltration of the neutrophilus, a local high concentration of pro-inflammatory cytokines and the endotoxine of the germs.

The infection occurs at variable age according to different studies, but it mostly concerns school children, predominantly male, as shown by our study and those of other authors. In our study, six cases are treated in five years with an average age of 8.83 years; range from five to 13 years (4 boys and 2 girls). In a group of 16



Figure 1: The gangrenous vesicle

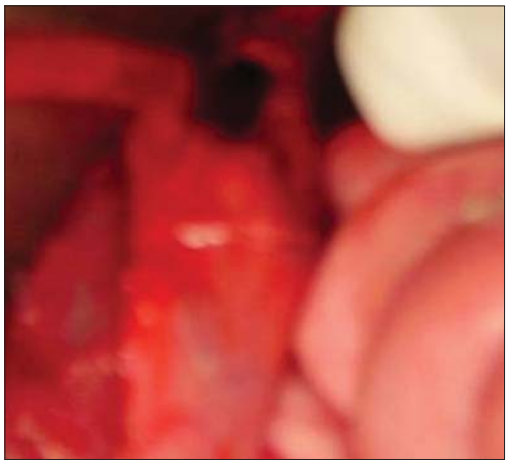


Figure 2: Perforated vesicle

Table 2: The epidemiological, diagnostic and therapeutical characteristics of the patients.

N°	Age	Sex	Initial treatment	Evolutional duration	Clinical exam	Haemoglobin white cell (leucocytes/ millimetre	Widal-Felix aglutination reaction	Stool culture	Ultrasound	Final treatment	Anatomo pathological aspect	Follow up (control:1 and 3 months)
1	5 years	F	Infusions of plants	15 days	Pain + defence in hypochondria + Murphy sign	6 g/dl 19000	Positive	Positive	Hypertrophy of biliary vesicle	Antibiotic (Ciprofloxacin + Métronidazole) + Cholecyst ectomy (under costal right through)	Gangrenous biliary vesicle	Simple
2	6 years	M	Anti-malarial	14 days	Pain + defence in hypochondria + Murphy sign	10 g/dl 21000	Positive	Not done	Not done	Antibiotic (Ciprofloxacin + Métronidazole) + Cholecystectomy (under costal right through)	Perforated vesicle	Simple
3	8 years	M	Anti-malarial	21 days	Pain + defence in hypochondria + Murphy sign	6 g/dl 27000	Positive	Positive	Hypertrophy of biliary vesicle	Antibiotic (Ciprofloxacin + Métronidazole) + Cholecystectomy (under costal right through)	Gangrenous biliary vesicle	Simple
4	10 years	M	Infusions of plants	15 days	Pain + defence in hypochondria +Murphy sign	6 g/dl 22000	Positive	Not done	Hypertrophy of biliary vesicle	Antibiotic (Ciprofloxacin + Métronidazole) + Cholecystectomy (under costal right through)	Congestive vesicle + pre-perforative zones	Simple
5	11 years	M	Anti-malarial	15 days	Pain + defence in hypochondria + Murphy sign	9 g/dl 30000	Positive	Positive	Hypertrophy of biliary vesicle + Liquid in the Douglas	Antibiotic (Ciprofloxacin + Métronidazole) + Cholecystectomy (under costal right through)	Double perforation	Simple
6	13 years	F	Anti-malarial + anti biotic	6 days	Pain + defence in hypochondria + Murphy sign	12 g/dl 30000	Positive	Not done	Hypertrophy of biliary vesicle	Antibiotic (Ciprofloxacin + Métronidazole) + Cholecystectomy (under costal right through)	Gangrenous biliary vesicle	Simple

N°: Number of patient; F: Female; M: Male

children treated in nine years, Chirdan and *et al*.[1] in Nigeria noted 13 boys and three girls with an average age of 11 years (ranges: 8 to 18 years). Ayité *et al*. in Togo[3] reported three boys and two girls with an average age of about 8.6 years (ranges: 7 to 14 years).

The clinical manifestations are seen at the second septenary when the typhoid fever is evolving. Those manifestations constitute the high temperature at 39°C to 40°C, an irregular pulse due to the relative bradycardia, abdominal pains, vomiting and diarrhoea. Those clinical manifestations are often terrific on the child and can evolve to peritonitis.[3,9] The fact that malaria and typhoid fever present the same feature in endemic areas [Table 1], most of our patients received malaria treatment. In Africa, according to our culture and believes, herbal-based infusions are supposed to treat all kind of disease. This attitude delays an early adequate treatment, and the patient only accesses to the hospital when the case is complicated.

Ultrasound is contributed to the diagnosis of the cholecystitis by showing an enlargement of the biliary vesicle with a thickening of its walls (4 patients over 6 in Table 2). Though Widal and Felix agglutination reaction is not fair, it is a guide to the diagnosis. The main aetiologic investigation is the stool culture (isolation of the germ), which was not done for all the patients.

In our study, all the patients benefited from a cholecystectomy and anti-biotherapy because of the complications described in some studies.[1-3] However, the medical treatment can heal the patient if there is no complication as reported in Chirdan *et al*.[1] in Nigeria and Yulevick *et al*.[9] in Israel studies. This medical treatment is an anti-biotherapy based on Fluoroquinolone, Ceftriaxone and macrolide in monotherapy or in association.[2,5,9] The same antibiotics have been used to our patients to complete the surgical treatment. However, we associated Metronidazole to prevent any anaerobic germs. This protocol has been applied to all the patients of the study. The cholecystectomy has been realized by laparotomy under costal right through. In fact, there is no coeliosurgery unit in the two hospitals. This explained the laparotomy indication.

We noticed gangrenous biliary vesicle on five patients and one congestive vesicle that present pre-perforative areas. The delays in consultation and in diagnosis are the cause of evolving complications (gangrenous and perforation). This rapid progress might have been linked to the immune deficiency and the malnutrition of the patients. Chirdan *et al*.[1] in Nigeria had reported a delay in consultation of two weeks even three months, and the complications were vesicular perforations, gangrenous and pyocholecystitis as in our study. It is also important to treat cholecystitis with anti-biotic in order to prevent complications. Post-operative follow ups of a cholecystectomy in acute typhoid cholecystitis are often favourable as our study and that of Ayité and al. reported.[3]

CONCLUSION

The typhoid cholecystitis is a frequent complication of the typhoid fever in children. The delays in consultation and diagnosis give ways to gangrenous and peritonitis threatening the prognosis. The surgical treatment by cholecystectomy and anti-biotherapy helps for patients healing. Preventive measures are important in endemic areas and for people with risk factors. Those measures concern good environment hygiene, good diet hygiene and hands washing.

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