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## Typhoid Perforation of the Appendix: a Rare Clinical Entity

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**Abstract:** Bleeding and perforation of the intestine are the most major complications of typhoid fever. Perforation usually occurs in the 2<sup>nd</sup> or 3<sup>rd</sup> week of the illness. Common sites of perforations are ileum, jejunum and caecum in order of frequency but perforation can occur in any part of the gut at any time during the illness.<sup>1</sup>

**Key words:-** Typhoid fever, perforated appendix, laparotomy.

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### Introduction:

Intestinal perforation mainly occurs in ileum, jejunum, or caecum but can occur in any part of the gut. We report two cases of typhoid perforation of the appendix: one in a child and another in an adult. A 7-year old boy was presented with febrile convulsions and peritonitis. His widal test was positive both pre-operative as well as post-operative period. Appendical perforation due to typhoid fever is a rare clinical presentation; hence it is being reported.

### Case report: first Case.

A 7-year old Libyan boy was initially admitted to the pediatric ward on 23/3/2002 with h/o high fever and convulsions lasting for periods of 5 minutes and 30 minutes prior to admission.

Seven days of fever preceding admission he was treated with anti pyretics at home. The boy had constipation for 4 days and lower abdominal pain with dysuria for one day prior to admission. He was immediately treated with IV diazepam, cold sponging and rectal paracetamol suppository. There was no past medical history of any major illness or epilepsy; immunization was complete.

O/E the child was ill, febrile (38.5 c) and dehydrated but conscious and oriented.

Vital signs were BP 90/60 P 120/mm RR 20/mm. Blood sample was obtained for investigations. (see table 1).

On the 2<sup>nd</sup> day of admission, the child was more alert, but still ill, febrile and mildly dehydrated. His abdominal examination showed guarding, tenderness and rigidity more in the lower abdomen.

The child had vomited twice and complained of lower abdominal pain and dysuria .

Surgical consultation was sought and the patient was transferred to the surgical ward.

A surgical team reviewed the history and examination and confirmed the diagnosis of peritonitis and further investigations were carried out as to the cause of peritonitis. He was kept on N.P.O. I.V. fluids started with other supportive treatment.

The patient started having a foul smell due to a large quantity of loose stool about 6 times in the surgical ward. The stool was sent for routine examination and culture.

On PR examination there was no boggy mass only mild rectal wall tenderness.

Chest X-ray and abdominal X-ray was non-contributory; all blood examination was repeated. Widal test was done. Ultra sonography was performed by a senior radiologist, which was reported as highly suggestive of acute appendicitis. The patient was well dehydrated, fever was controlled, triple antibiotics regimen (ampicillin, gentamycin & flagyl in appropriate dosage) was started. The patient was taken up for surgery on 25<sup>th</sup> March 2002. Under G.A. with E.T.T. After routine aseptic cleaning and drapping, right lower oblique incision was made. Findings were: there was congestion with a few areas of hyperemia over the ileum and caecum.

Appendix was acutely inflamed, thick and edematous having tiny perforation at the tip, surrounded by a small amount of peri appendical fluid. There was no free pus or collection in the pelvis.

Classical appendectomy was performed and warm saline lavage done. Abdomen was closed with a tube drain. Post-operative period was uneventful except for a gradually subsiding fever and loose stools. Sutures removed on the 7<sup>th</sup> day and the patient was discharged on the 8<sup>th</sup> day. He was put on augmentin and multivitamin syrup as pre-operative and post-operative widal test was positive.

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**Table 1: investigations of first case**

1	Urine examination	Pus cells 10-12. RBC 6-8, Bacteria ++ Epith cells ++ sugar – Neg. proteins -+		
2	Stool examination	Cyct, larva ova –neg. puscell, RBC 0-1/HPF		
		23 <sup>rd</sup>	25 <sup>th</sup>	30 <sup>th</sup>
3	CBE	11.800	7.4x10 <sup>3</sup> M/L	9.3x10 <sup>3</sup> M/L
	Hb	-	10.5 g%	12g%
	PLT	-	144x10 <sup>3</sup>	618x10 <sup>3</sup>
	Poly	-	73.4%	62%
4	Stool Cls	No growth		
5	Widal test	S. typhi H. 1:160 S. paratyphi 'B' 1:80	On 24 <sup>th</sup> & 30 <sup>th</sup>	
6	Chest X-ray	No gas under diaphragm		
7	Abdomen X-ray	Few gaseous distention of Colon		
8	Sr. chemistry	BS 74 mg% BU 19mg%, Na 138, K 2.8 Cal 168		
9	Bl group	A +		
10	US- abdomen	Appendix distended Non-compressible with small periappendical collection. Highly suggestive of Acute appendicitis		

**Table 2: Investigation of second case**

	23/5	25/5	26/5	29/5
Hb	16.28%	168%	15.79%	15
TLC	14.200/-	4.400/-	7.400/-	9.900/-
BU	24	30	32	--
Creat	--	--	--	--
Na	133	134	138	--
K	3.7	3.5	3.8	--
Ca	0.99	0.98	1.06	--
Plt	121x10 <sup>3</sup>	--	--	104x10 <sup>3</sup>
BS	176	87	--	--

Widal 25.5.02 pre-op.

STO - +

STH - +

SPTH.A +

SPTH. B +

Widal 29.5.02

STO 1:320

STH 1:320

CXR no gas under diaphragm

Abdominal x-ray – few gaseous distended large bowel no air fluid level

USG – 1<sup>st</sup> appendicular mass 6.5 x 5.5 well defined hydrogenous no free fluid in the abdomen or pelvis.

USG – 2<sup>nd</sup> appendix thick walled 5.2 x3.4 with calcification. No localized collection, no free fluid. Bowel engorged thick walled no perforation.

## 2<sup>nd</sup> Case:

A.S. 27 years Libyan male from Marzuk was admitted on 23.5.02 with acute pain abdomen

of 4 days duration associated with vomiting and fever for one day.

He was admitted in Marzuk hospital for one day and transferred here for further management.

On examination the patient is tall, well built, febrile, ill looking and dehydrated.

His vital signs were Bp 130/80 p. 120/min RR 18/min and T-39°C. Respiratory and cardiovascular systems were unremarkable. Abdominal examination revealed, mild distension, tenderness over RIF with guarding and rigidity.

There was palpable mass in RIF about 4.5 cm x 5 cm. There were no signs of generalized peritonitis.

Clinical diagnosis of Appendicular mass was made and conservative line of treatment adopted. He was kept n.p.o, fluids started, antibiotics Rocephin 1gx2, flagyl 500mgx3 iv given with other supportive measures.

Blood was obtained for detailed investigations including widal which was positive (see the

table). The patient was on conservative line of management but did not improve.

His pyrexia, tachycardia and abdominal tenderness and toxic state made us to decide for laparotomy. Laparotomy was performed on 25.5.02 under G.A. with E.T.T. and the abdomen was opened through ® lower paramedian incision.

The findings were inflamed, suppurative, gangrenous appendix with perforation at the tip surrounded by localized collection of pus.

The caecum, ileum were thick, edematous, adherent with fibrinous plaques.

Careful lysis of adhesions, through warm saline lavage performed appendectomy done by gentle handling of the bowel.

Tube drain put and the abdomen was closed in layers.

Postoperative period was less stormy as fever, tachycardia abdominal pain gradually settling down.

Catheter, NGT were removed subsequently in 3-4 days time after resumption of good bowel movements.

Post-operative widal test was positive. STO 1:320 and STH 1:320. He was put on CIPROX 500mgx2 and B complex tablets with advise on regular follow up 2 wkly.

He was discharged on 29.5.02 in good general condition.

**Discussion:**

Typhoid fever is endemic in most tropical countries and is caused by ingestion of salmonella organisms. Most severe symptoms are produced by S. Typhi about 200 cases occur per year England and Wales.<sup>2</sup>

Organisms may survive in gall bladder and urinary tract having invaded through small intestinal mucosa after multiplication in bile rich area in the 2<sup>nd</sup> part of duodenum.<sup>3</sup>

Organisms may be take-up by any part of the body but usually enter payers patch mostly in ileum and jejunum. Here ulceration develops and possible hemorrhage and perforation takes place, which occurs, in the 3<sup>rd</sup> week of the disease.<sup>4</sup>

Although typhoid fever affects many organ system but the most serious complications occur in .GI. tract. G.I. hemorrhage and intestinal perforation are serious complications of typhoid fever and responsible for most of the fatalities.<sup>5</sup>

G.I. Hemorrhage is reported form 0.8% - 5% Perforation is reported around 5% (0-39%).<sup>6</sup>

Incubation	Clinical	bacteremia	complication	Mortality
S. Typhi 10 days	Typhoid fever	>90%	Intestinal perforation & hemorrhage	2-32%
S. Typhi A-B-C 10-14 days	Paratyphoid fever	>90%	Intestinal complications less common	<2% ..... (7)

Perforation of the gut commonly occurs in the 2<sup>nd</sup> or 3<sup>rd</sup> week of typhoid fever and can occur at any time of the illness. In the hospital it may be observed in a child is aten associated with sudden deterioration Hypotension, tachycardia and abdominal rigidity as it was seen in our patient. He was admitted with febrile convulsions. Proceeding 7 days of fever and the next day he was found to have peritonitis.

Some times the perforation is less dramatic resulting in paralytic ileus.<sup>8</sup> When perforation occurs, a fit patient will show all the signs of peritonitis as in our patient, but the seriously ill patient may show very little signs of abdominal tenderness guarding and rigidity.

Some times confusion occurs due to the rupture of inf. Epigastric artery in typhoid fever and there is similar tenderness in R.I.F.<sup>9</sup>

Management of perforation has been controversial in the absence of controlled prospective study most authors currently advocate operative rather than non-operative treatment. Operative treatment is preferred because typhoid fever produces fulminate peritonitis unlike other perforations. Patients are usually critically ill, septicemic, often dehydrated and have electrolyte imbalances.<sup>10</sup>

At laparotomy, usually a single perforation is found in the antimesentric border of ileum in 80%, and two perforations in 15%, about 50% of the perforations are located within 40 cm of ileum. 2% of perforations are seen in caecum.<sup>11</sup>

At laparotomy, bowel is very friable and should be handled very gently. Whether perforation is over sewn or resection done depends on the findings at laparotomy.<sup>12,13</sup>

**Mortality:**

Intestinal perforation is the leading cause of death in collective series in the developing countries mortality is around 43%. Time interval between the perforation and surgery is critical for better prognosis. And best results are obtained if operated with in 24 hours.<sup>14</sup>

**Conclusion:**

Typhoid perforation of the appendix is a rare complication. In our case both pre-op. as well as post op. Widal test was positive in the adult patient, Paratyphoid B, S. typhi H was positive and S.T.O was significantly absent. We are of

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the opinion it could be paratyphoid perforation which is about 2% in Occurrences. Child is doing well in subsequent follow-ups. Adult male patients went to his home-town and not returned.

We feel in all the unusual type of acute appendicitis with high fever of more than 3-4 days widal test should be done for proper management.

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