EFFECT OF DELAYED PRESENTTION ON SURGICAL MANAGEMENT IN CHILDREN WITH INTUSSUSCEPTION

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ABSTRACT

Objective: *To evaluate the effect of delayed presentation on surgical management of intussusception in children.*

Material and Methods: *This study was conducted at the Department of Paediatric Surgery Post Graduate Medical Institute, Lady Reading Hospital, Peshawar from 1st January 2006 to 31st June, 2007 and spanned over a period of 18 months. All children with surgically diagnosed intussusception were included in the study. A total of 71 children were studied. The relevant information was collected in a pre-designed standardized proforma, for the purpose of the study.*

Results: *Eight (11.26%) children presented in 24 hours, six (75%) were successfully manually reduced, and two (25%) required resection of bowel and end to end anastomosis, four (5.63%) presented in 24-48 hours, two (50%) were manually reduced and two (50%) required resection and end to end anastomosis, sixteen (22.53%) presented between 48-72 hours, eight (50%) were manually reduced and eight (50%) required resection and end to end anastomosis of the bowel twelve (16.90%) presented in 72-96 hours, two (16.66%) were manually reduced and ten (83.33%) required resection of the bowel and end to end anastomosis. five (7.04%) presented in 96-120 hours, three (60%) were manually reduced and two (40%) required resection of bowel and end to end anastomosis. seven (9.85%) presented in 120-144 hours, four (57.14%) were manually reduced and three (42.85%) required resection of bowel and end to end anastomosis. nineteen (26.76%) presented in 1 or more than 1 week, nine (47.36%) were manually reduced and ten (52.63%) required resection of bowel and end to end anastomosis. Eleven (15.49%) required ileo-sigmoid, eighteen (25.35%) ileo-transverse, five (7.04%) ileo-ileal one(1.40%) jejuno-jejunal, one (1.40%) ileo-(ascending)colic and one (1.40%) colo-colic anastomosis, after resection of the gangrenous bowel.*

Conclusion: *Delay in presentation and consequent delay in management does not consistently affect the surgical treatment of intussusception in terms of per-operative manual reducibility and the need to resect non-viable, gangrenous gut in case of manually irreducible intussusception.*

Keywords: *Intussusception in children, delayed presentation, manual reduction, resection mofbidity.*

INTRODUCTION

Intussusception (IS) is the invagination of the bowel by a more proximal segment, which can be propelled distally by peristalsis resulting in intestinal obstruction and vascular compromise of the intestine[1]. The upper part of the bowel invaginates into the lower part called the intussuscepiens, dragging its mesentery along with it into the enveloping loop, leading to constriction of mesentery and consequent obstruction to venous return and thus engorgement of the intussusception follows[2]. The slightest interference with lymphatic and venous drainage, which occurs almost at once, results in increase of tissue pressure. This further increases resistance to the return of the venous blood. Venules and capillaries become engorged and bloody, edematous fluid drips into the lumen of the bowel. The mucosal cells swell and goblet cells discharge mucus, which mixes with the bloody transudate in the lumen and forms the "currant-jelly-like" stool. When edema increases

S.No	Period of Presentation	Number of Children	Mode of Operative Treatment	
			Manually Reduced	Resection and end-to-end anastomosis
01	Within 24 hours	8 (11.26 %)	6(75%)	2(25%)
02	> 24 48 hours	4(5.63%)	2(50%)	2(50%)
03	> 48 72 hours	16(22.53%)	8(50%)	8(50%)
04	> 72 96 hours	12(16.90%)	2(16.66%)	10(83.33%)
05	> 96 120 hours	5(7.04%)	3(60%)	2(40%)
06	> 120 144hours	7(9.85%)	4(57.14%)	3(42.85%)
07	1 week	19(26.76%)	9(47.36%)	10(52.63%)
	Total	**71**	**34(47.88%)**	**37(52.11%)**

Table 1

venous outflow is completely obstructed. As arterial blood continues to enter the area of intussusception, tissue pressure rises until it is higher than arterial pressure and gangrene of the involved gut ensues[3]. IS is the most common cause of intestinal obstruction in infants and young children44-5. The peak age of presentation is 4-8 months[4]. In the United States approximately 2/3 of cases occur below the age of 1 year[5]. In developed countries a favourable clinical outcome is more likely because of timely diagnosis and early treatment by less invasive procedure of enema reduction5-6 By contrast in developing countries, delayed diagnosis with ensuing bowel necrosis, followed by attempted operative reduction, is associated with high case fatality i.e 18 % in Nigeria[6], 20% in Indonesia[7] and upto 54% in Ethiopia[4]. Although IS is the most common cause of intestinal obstruction in infants, it is still far less common than gastroenteritis, particularly in developing countries[8-9]. The obstruction of the venous return results in venous congestion and bowel wall oedema which eventually may lead to obstruction of arterial blood supply, bowel infarction, perforation, septicemia and even death[10]. Mostly the cause is unknown, with anatomical abnormalities triggering IS, identified in fewer than 10 % of cases and that mainly in older children[4,10]. The frequent association of IS with hypertrophy of Peyer's patches and mesenteric lymphadenopathy raises the possibility of an infectious cause[11].

In most emergency cases laparotomy by midline incision was performed. All the anastomosis and repairs were done by a single layer extra-mucosal technique, using vicryl 2/0, on atraumatic needle. Different procedures were primary end to end anastomosis, ileostomy closures, ileo-ileal & Jejunal anastomosis and stricturoplasties (*Figure 01*). All the anastomosis were checked for their patency by milking the contents through the anastomosed parts[4]. All patients were given 3rd generation Cephalosporins and infusion Meteronidazole, i/v fluids, nasogastric suction, nil oral regimens, good analgesia and strict intake output charts. Complications of the procedure were observed and noted on profarmas during hospital stay and on follow up visits for up to three months.

In particular adenovirus are implicated as they have been found in intestinal and mesenteric lymph node tissue, and in oropharyngeal and rectal washes of children with IS[4,11-12]. In only about 6% of cases is IS associated with pathologic lead point, predominantly Meckle's diverticulum[13]. The vast majority of intussusception episodes, termed "idiopathic" arise in the ileum because of lymphoid hyperplasia of Peyer's patches, suggestive of a response to infection. An infective aetiology is further suggested by the presence, in about 50% of children with IS, of viral sheddings in the stools, together with demonstration of virus particles in pathologic specimens[14]. Most evidence implicates adenovirus [11,15-17] and recently respiratory syncytial virus[18] has also been incriminated as the causative agent. IS in 25.4% of children may be operatively reduced[19]. In same studies 70.64%[20] and 37%[21] rate ofsurgical intervention has been reported. Mean time after developing symptoms of IS and before presentation to hospital being 1.8 days and 47.4% of children requiring resection of gut[22].

MATERIAL AND METHODS

This study was conducted at the Department of Paediatric Surgery, Post Graduate Medical

Institute, Lady Reading Hospital, Peshawar. All the children upto the age of 12 years, only with surgically-diagnosed intussusception, were included. A proforma containing the data relevant to the purpose of study was designed which was kept up-to-date till the per-operative diagnosis of intussusception was made. The duration of symptoms was calculated from the appearance of first symptom(s) till the presentation to the hospital for treatment. The data so obtained was entered in a standardized proforma, especially designed for the study and then analysed according to the purpose of the study.

RESULTS

After study of 71 children with surgically diagnosed IS, the following tabulated results were obtained:

Twenty-eight (39.43%) children presented within 48-96 hours, ten (35.71%) were manually reduced and eighteen (64.28%) required resection of bowel and end-to-end anastomosis. Twelve (16.90%) presented within 96-144 hours i.e 5-6 days, seven (58.33%) were manually reduced and five (41.66%) required resection of bowel and end-to-end anastomosis. Thus amongst the total 71 children thirty-four (47.88%) had viable gut and were manually reduced and thirty-seven (52.11%) required resection and end-to-end anastomosis. After resection of gangrenous gut, eleven (15.49%) cases required ileo-sigmoid, eighteen (25.35%) ileo-transverse, five (7.04%) ileo-ileal, one (1.40%) jejuno-jejunal, one (1.40%) ileo-(ascending)colic and one (1.40%) colo-colic anastomosis.

DISCUSSION

Syed HM et al[23] studied 38 children and noted that duration of symptoms, was < 24 hours in 21% cases, 24-72 hours in 31.5% cases,> 72 in 39.4% cases and > 1 week in 78% cases. Manual reduction was successful in 34% cases and resection of bowel was carried out in 38% cases. Kuremu RT[24] studied 36 patients, the duration of symptoms being a mean of 5 days (with a range of 1-14 days), all the children were managed surgically. 67% were manually reduced and 33% required resection and end-to-end anastomosis of gut. Carneiro PM et al[25] found majority of children presenting after 48 hours. Among surgically treated 60.7% were manually reduced and 39.3% required resection of gangrenous bowel and end-to-end anastomosis. Somme et al19 found that a delay of more than 24 hours in the diagnosis and management of intussusception put the children at greater risk for operative reduction whereas Reinjen JA et al[26] have found that duration of symptoms of more than 48 hours is a contraindication for hydrostatic reduction. Caution shown in both these studies implies and signifies nothing more than the only one reason that due to longer duration of symptoms the gut involved being too odematous and not necessarily gangrenous can not be reduced hydrostatically and therefore operative reduction is resorted to. Logically speaking the greater being the delay in presentation of intussusception the more should be the chances for the gut to become gangrenous but our study as well as those conducted by other workers referred to above do not support such logical conclusion. Perhaps the reason being that (a) in those children who present later than 48 hours but have a viable gut possibly their mesentery does not contain sufficient fats to favour constriction of the mesentery at the neck of intussusception and in turn block the arterial supply as well as venous return thus preventing ischaemia and gangrene of the gut or (b) perhaps once the gut having invaginated into its adjacent gut, the further process of invagination being too slow due to dehydration and electrolyte imbalance (including hypokalaemia inhibits peristaltic activity and causing paralytic ileus), again preventing complete obstruction of the vasculature and hence enabling the gut to survive a prolonged ischaemia Duration of illness, fever, leukocytosis patient's age and recurrences are no longer considered absolute contraindications for hydrostatic reduction[27]. At present, the only contraindications to attempting a rigidly controlled barium enema reduction is evidence of peritonitis on physical examination and evidence of perforation or marked intestinal obstruction on X-ray examination[28]. AL Malki20 studied 34 cases, 08(23.52%) could be reduced with barium enema, 26(76.47%) underwent laprotomy out of which 06(23.07%) required resection of bowel and the remaining 20(76.92%) were manually reduced, thereby implying that the duration of symptoms no matter whatsoever, does not affect the viability of gut involved in intussusception.

CONCLUSION

There is no association in delay in presentation of symptoms and consequent delay in surgical management of intussusception, in terms of per-operative manual reducibility and the need to resect non-viable, gangrenous gut in case of manually irreducible intussusception.

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