



Non operative pneumatic reduction of intussusceptions in holly Karbala

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Abstract

Introduction: Intussusception is one of the major causes of intestinal obstruction in children and infants. The change in treatment needed for intussusception from surgical management is primarily minimal with air or contrast enema. It has been shown that pneumatic reduction works to reduce the duration of hospitalization, and leads to a reduction in the recovery period, and works to reduce the risks that may result from complications associated with abdominal surgeries, in addition to that it reduces the cost required for the hospital.

Patients and methods: Between May 2013 to November 2015, a the study was performed on patients with unknown intussusceptions presented at Al-Hussein Medical City Department of Surgery. diagnosis was made depending on clinical presentation and or ultrasound. Cases were excluded those with the appearance of peritonitis, x-ray findings of bowel perforations, features of shock and those with secondary cause of intussusceptions. 18F Foley catheter was inserted through the rectum and attached to the buttocks, and a Foley catheter was connected to a sphygmomanometer. The air was gradually aspirated through fluoroscopy guidance and the controlled pressure did not exceed 120 mm Hg, and the air reduction was considered complete with control of air entry into the ileum.

Result: Pneumatic reduction was performed on 68 patients, and this application was successful with 60 patients, with an overall success rate of approximately 88%. 7 of above 60 cases, a second pneumatic trail were needed till full reduction because of good but in 1st-trial is better. 3 of 60 successful cases a recurrent intussusceptions occurred on different occasions were reduced by pneumatic enema. 8 patients had failed pneumatic enema and underwent surgery, 4 after 1st trail failure others 4 after 2nd trail failure because of progression failure of reduction. Surgically reduced cases had healthy bowel no resection were performed. Through the examination, no complications or perforations were seen in the intestine by attempts at pneumatic reduction.

Discussion: Although pneumatic reduction has become widely acceptable, it is not yet the norm in Iraq. For this reason I decided to use equipments readily available in the hospital (sphygmomanometer and fluoroscopy). The results appeared negative range of pneumatic reduction, its near about 88%. early presentation less than 24 hours and proximal site intussusceptions, the higher success rate. delayed repeated reduction attempts facilitating the subsequent reduction attempt and increase success rate. In our study there is no perforations were appear.

Conclusion: Pneumatic reduction is the treatment a of choice for intussusceptions unless absolute contraindications. The pneumatic reduction method is effective and at the same time safe and can be performed easily in all hospitals.

Keywords: Pneumatic, abdominal surgeries, intussusceptions

Introduction

Intussusception is known to be common causes of the intestinal-obstruction in infants and toddlers ^[1, 2]. Intussusception may affect part of the adjacent intestine. The vast majority are idiopathic (or primary) intussusceptions and do not have a pathologic lead point. adenoviruses and rotaviruses have been implicated. Secondary intussusception has an identifiable lesion and is the most common focal point of the disease, represented by Meckel's diverticulum followed by adenoids. Among the most important symptoms of this disease are intermittent pains that occur in the abdominal region with "jelly currant" stools, and the presence of a palpable mass with the right lower quadrant of the abdominal region ^[1, 2].

Intestinal perforation, peritonitis, and persistent hypotension are contraindications to nonsurgical reduction ^[1]. As for the change in the necessary treatment of intussusception from surgical management, it is in the first place leading to a preference for reduction by radiation, which was either by

air or by contrast. Therefore, some studies have reported that airreduction therapy for this type of disease has better success rates than if barium reduction was used as a method of treatment ^[3, 4, 5]. Reducing intussusception and reducing intussusception using compressed air instead of surgical method that used in 1864 by the Scottish scientist Grieg ^[6], and it has also been proven that it works to reduce the time required for hospitalization and reduces both the recovery period and the risks resulting from negative developments that related with abdominal-surgery, and works to reduce the costs of hospitals ^[7].

This method included blowing air directly into the rectum at a pressure between 80 and 120 mm/Hg, subject to endoscopic control. Success rates (more than 90%) were recorded with reducing air pressure ^[5]. In Iraqi hospitals, this method has not been applied to reduce intussusception with compressed air. So I decided to apply it, and the purpose of its application is for determination of the effect of pneumatic reduction by the usual equipment used which presents in most hospitals.

Patients and methods

For about May 2013 and November 2015, an our study (+ve results) carried out on patients with idiopathic intussusceptions staying at Al-Hussein Medical City Department of Surgery, to evaluate the therapeutic effect of pneumatic reduction. After the history and the accuracy of the results of the physical examination, including the rectal examination, have been documented, the diagnosis was made depending on clinical presentation in typical cases while suspected cases were confirmed by ultrasound. Excluded from this study were cases that showed signs of peritonitis, X-ray findings showing intestinal perforation, and cases characterized by trauma. and those with secondary cause of intussusceptions. Admission then starting resuscitation with intravenous-fluids, double-antibiotics (3-rd generation cephalosporin, and metronidazole), base line investigation were performed.

Child was made to lie on the fluoroscope table without any anesthesia. 18F Foley’s catheter was introduced per-rectally, and buttocks were strapped. Foley’s catheter was connected to sphygmomanometer (figure 1). Air was gradually inflated under fluoroscopic guidance (figure 2) and controlled pressure not exceeding >120 mm Hg. Initial location of intussusceptum was noted. Pneumatic reduction was considered complete when air was observed entering the ileum. If no reflux then considered as irreducible, However, with the satisfactory movement of this intussusception seen under fluoroscopy, the cases were subjected to another aerobic experiment after 6 hours. for failure cases operation were performed. All the successful pneumatic reduction cases were reconfirmed by US, admitted, maintained on IV fluids, feedings were resumed within 12 hours and discharged within 24 hours. Parents were advised to report immediately if symptoms recurred.

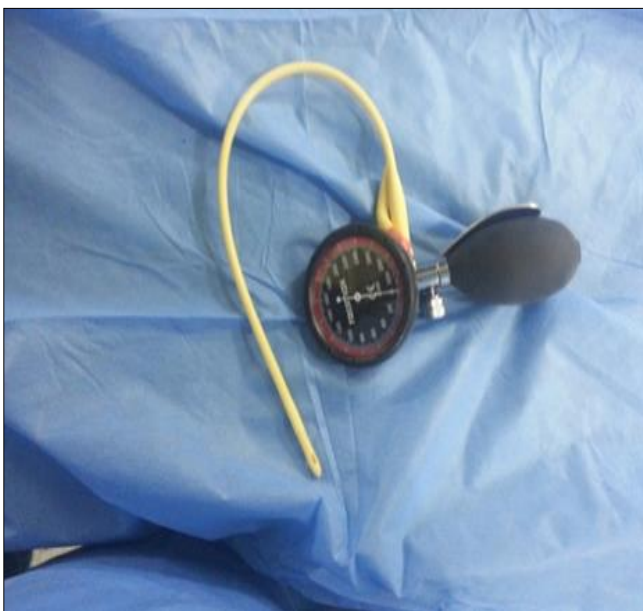


Fig 1: Connected foley’s catheter to sphygmomanometer



Fig 2: Fluoroscope

Result

72 intussusceptions episodes ranging in age from three months to 7 years were being received at surgical emergency. Of the 72 intussusceptions episodes, 4 patients were excluded from pneumatic enema trail because of signs of peritonitis in 2 patients, those had surgery with resection and anastomosis because of gangrenous bowel. Other 2 patient their presenting ultrasound show pathologic leading point. cystic lesion in one and mass in other one. after exploration, resection and histopathological study they were duplication cyst and lymphoma respectively, figure 3.

The remained of 68-patients which underwent to the pneumatic-reduction trail, figure4, the successful cases were approximated for about 60-patients, represented an overall reduction success rate of 88%. Table 1

7 of above 60 cases, a second pneumatic trail were needed till full reduction because of good but arrested motion from intussusception the first time. Table 2

3 of 60 successful cases a recurrent intussusceptions occurred on different occasions were reduced by pneumatic enema. One case after full reduction show filling defect in cecum which indicate a pathologic leading point so on table

exploration and resection. Later histopathology study result it was a case of lymphoma.

8 patients had failed pneumatic enema and underwent surgery, 4 after 1st trail failure others 4 after 2nd trail failure because of progression failure of reduction. Surgically reduced cases had healthy bowel no resection were performed, Table 3. There are no complications or perforations in the intestine when using air reduction (not in the first trial, not even in the second). After deflating with compressed air, the 60 patients were discharged within 24 hours after the oral feeding procedure.

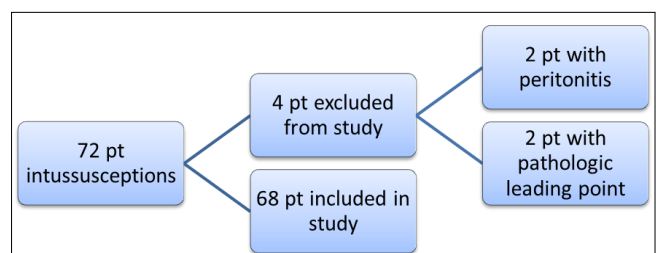


Fig 3: Shows histopathological study, of duplicate cyst and lymphoma respectively.

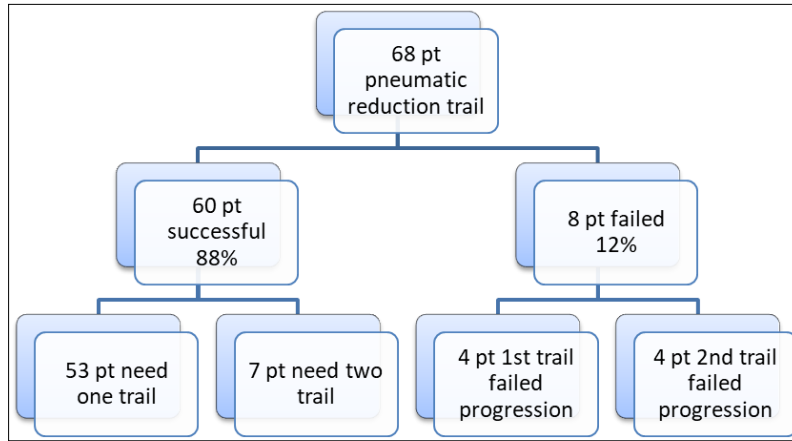


Fig 4: Underwent pneumatic reduction trail.

Table 1: Successful cases

Age	Less than 12 month		More than 12 month	Total
No.	39		21	60
%	65%		35%	100%
sex	male		female	total
No.	33		27	60
%	55%		45%	100%
Bleeding	yes		no	Total
No.	21		39	60
%	35%		65%	100%
onset	Less than 24 hours	24-48 hours	More than 48 hours	total
No.	36	18	6	60
%	60%	30%	10%	100%
site	Ascending colon	Transverse colon	Descending colon	total
No.	46	7	7	60
%	76%	12%	12%	100%

Table 2: Second trail pneumatic enema

Age	Less than 12 month		More than 12 month	Total
No.	6		1	7
%	86%		14%	100%
sex	male		female	total
No.	5		2	7
%	71%		29%	100%
Bleeding	yes		no	Total
No.	6		1	7
%	86%		14%	100%
onset	Less than 24 hours	24-48 hours	More than 48 hours	total
No.	1	4	2	7
%	14%	57%	29%	100%
site	Ascending colon	Transverse colon	Descending colon	total
No.	7	0	0	7
%	100%	0%	0%	100%

Table 3: Failed cases

Age	Less than 12 month		More than 12 month	Total
No.	5		3	8
%	63%		37%	100%
sex	male		female	total
No.	5		3	8
%	63%		37%	100%
Bleeding	yes		no	Total
No.	7		1	8
%	88%		12%	100%
onset	Less than 24 hours	24-48 hours	More than 48 hours	total
No.	0	5	3	8

%	0%	62%	38%	100%
site	Ascending colon	Transverse colon	descending & sigmoid colon	total
No.	0	2	6	8
%	0%	25%	75%	100%

Discussion

Although pneumatic reduction has become widely acceptable [4, 8, 9], it is not yet the norm in Iraq. For this reason I decided to use equipments readily available in the hospital (sphygmomanometer and fluoroscopy). This study results showed successful rate of pneumatic reduction about 88% similar in range 35%-95% [4], and higher than others (33% to 50%) [10]. That is a little lower than results obtained by Hadidi *et al* in 1999 [11], and El Saket in 2004 [12], giving a success rate of 90%. However our success rates of 88% is higher than those of Supika Kritsaneepaiboon *et al* 74% [13], and M A Zulfiqar *et al* 73% [14], K M Kiran Kumar *et al* 76% [15]. Table 1.

I did not use muscle relaxant because straining during procedure protects against bowel perforation. Furthermore the increased intra-abdominal pressure caused by crying and straining resulted in rapid reduction [16, 17]. More in male [1, 2]. with age of less than 12 months, successful pneumatic enema more in male and those age less than 12 month because of cases are more in that group, table:1. early presentation less than 24 hours and proximal site intussusceptions, the higher success rate [18, 19]. we found that a longer duration of symptoms and signs reduces the chance of successful pneumatic reduction, which is in agreement with other reports [20]. table 3. Location of intussusceptum is important as Proximal (ascending and transverse colon) intussusceptions are easy to reduce while distal (descending and sigmoid colon) are difficult with failure reduction. table 3. Delayed repeated reduction attempts were done in 7 patients, those were more in male aged less than 12 months and presented after 24 hours. Proximal site intussusceptions increase their chance for success, but distal site intussusception lead to failure and surgery. Delayed repeated reduction attempts is that the partial reduction achieved with the first enema improves the venous drainage from the residual intussusceptions, and the interval before a repeated enema allows the congestion and swelling to subside, facilitating the subsequent reduction attempt [21]. Essential criteria for the second trial include the following: absence of signs of peritonitis, initial partial reduction of the intussusception, and stable vital signs. Sandler *et al* [22]. Failure of reduction was seen in 8 patients 12% of the cases. More in male aged less than 12 months. Those with bleeding per rectum, delayed presentation and distal site intussusceptions. so longer duration of symptoms and signs reduces the chance of successful pneumatic reduction, which is in agreement with other reports [20].

3 recurrent intussusceptions, all of whom were in the successful group. The present recurrent rate was 5%, which was similar to other studies (5.4% to 15.4%) [23]. No perforations were seen in our study in contrast to perforations seen in various studies including those by Supika Kritsaneepaiboon *et al* [13]. Daneman *et al*. found the perforation occurred in patients under six month age with a long duration of symptoms (>36 hours) [23]. This study has proven that Pneumatic reduction was the treatment of choice for intussusceptions unless absolute contraindications. It is

effective and safe and can be easily performed in any hospital that has a fluoroscopy.

Conclusion

We conclude from our study that air reduction is the most appropriate treatment for intussusception unless there are any absolute contraindications such as perforation, peritonitis, or others. This pneumatic reduction is characterized by the surgeon's dispensation of the operation and anesthesia and related procedures. In addition, it reduces the length of stay in the hospital, and reduces the recovery time and its cost is low. The device consisting of a sphygmomanometer and a Foley catheter is well-functioning and safe, resulting in reduced pneumatic intussusception under laparoscopic control.

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