Original Article

A clinicopathologic study of intussusception in Nepalese adults

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Abstract

Introduction: Intussusception is rare in adults and is usually secondary to a definable pathology. This study was designed to review adult intussusception, including presentation, diagnosis, and pathology.

Methods: A retrospective study of 18 cases of intussusception in individuals older than 18 years of age visiting the department of surgery of Civil Service Hospital from 2010 to 2018 was done.

Results: There were 18 cases of adult intussusception. The mean age was 49.2 years (range 19-84 years). Abdominal pain and vomiting were the commonest symptoms. The median duration of presentation was 5 days (range 20 hours to 10 months). Three patients (16.6%) presented with generalized peritonitis. There were eight ileocolic, seven ileoileal, and three colocolic intussusceptions. Two patients (11.1%) settled spontaneously. Twelve out of the 18 patients (66.6%) had leading lesions. Benign pathologies were seen in seven cases (38.8%) and malignant in five patients (27.7%). All malignancies were in the large bowel.

Conclusions: Adult intussusception is a rare entity, nearly one-third of their causes are malignant. Surgery is the best recommended treatment, with or without a primary reduction of the intussusception; the latter can result in more limited bowel resection.

Keywords: Adult intussusception; Bowel obstruction; Colocolic; Ileoileocolic; Lead point.

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Introduction

Intussusception is defined as the telescoping of a segment of the gastrointestinal tract into a distal one.[1] Intestinal intussusception is a common disorder in children, however, it is a rare clinical entity in adult patients.[2] Adult intussusception represents 5-8.2% of all cases of intussusceptions and only 1–5% of intestinal obstructions.[1,2] Most of the cases (70-90%) of adult intussusceptions are caused by an identifiable lead lesion.[3,4] Adult intussusception is always treated by surgery. However, reduction before resection has always remained controversial.[1-4] The present study reviews our experience of this rare clinical entity, attempting to summarize the clinical features, presentation, and its causes.

Methods

It is a retrospective study of case records of all patients aged 18 years or older admitted to the Civil Service Hospital of Nepal, Kathmandu from 2010 January to December 2018, who were diagnosed with intussusception. We reviewed the demographic data, together with clinical signs, diagnostic tests, diagnosis, treatment, etiology, and location of the intussusception, follow-up, and complications. The preoperative, operative, and pathologic records were reviewed to determine the location of the involved segment, conservative or surgical management, and the nature of the lesion, and the clinical course of the patient. Ethical clearance was taken from the Ethical committee of Civil Service Hospital (Ref no 48/10).

Intussusception was preoperatively diagnosed with ultrasonography with the target and doughnut signs on transverse view and the pseudo-kidney sign in the longitudinal view, and/or contrast-enhanced computed tomography of the abdomen with the characteristic sausage or target sign, bowel-within-bowel appearance in more than one image with or without a lead point and bowel obstruction, inclusion of mesenteric fat or vessels, bowel wall edema, and fat stranding, and mesentery in the lumen.[4,5] The intussusceptions were classified according to the location and pathological lead-points into three categories: (1) ileoileal (confined to the small bowel), (2) ileocolic (prolapse of the terminal ileum through the ileocecal valve within the caecum/ascending colon) and (3) colo-colic (involving the large bowel); and according to the etiology into benign, malignant or idiopathic.[7]

Results

There were 18 patients in our study. There was a slight female predominance: 11 females (62 %) and seven males (38 %). The youngest patient in this series was aged 19 years and the oldest was aged 84 years (mean 49.2 years).

Table 1. Clinical presentation of adult intussusception

Symptoms		**n (%)**
1	Abdominal pain	18 (100)
2	Vomiting	14 (77.78)
3	Abdominal distension	6 (33.33)
4	Chronic constipation	7 (38.88)
5	Currant-jelly stools	5 (27.77)
Signs		
1	Tenderness	6 (33.33)
2	Lump	8 (44.44)
3	Increased bowel sounds	8 (44.44)
4	Localized guarding	6 (33.33)
5	Generalized guarding	3 (16.66)
6	Fever	1 (5.55)

Pain was the most common presenting complaint and was present in all of the 18 patients (100%). Other symptoms included vomiting (77.78%), abdominal distension (33.33%), and currant-jelly stools (27.77%) (Table 1). A palpable lump was found in only eight patients (44.44%), and tenderness and localized guarding was found in six patients (33.33%). Eight patients (44.44%) presented with acute intestinal obstruction. The rest of the patients presented with more chronic symptoms during a period of weeks to months. Three patients (16.66%) presented with generalized abdominal guarding and features suggestive of generalized peritonitis. The median duration of symptoms was five days, ranging from 20 hours to 10 months.

In all patients, plain abdominal x-rays were done initially. Two patients (11.11%) had pneumoperitoneum. Ultrasound was not done in the two patients with pneumperitoneum. In the other 16 patients, ultrasound was done with confirmation of intussusception in 11 patients (68.75%). Eight patients (44.44%) had dilated bowel loops, signifying acute obstruction. CECT confirmed intussusception in all the patients.

Sixteen patients out of the 18 in our series underwent laparotomy. Two patients, one with ileocolic and another with ileoileal intussusception were planned for surgical intervention but they improved over a few hours, with the disappearance of the symptoms and lump. They underwent a colonoscopy and a barium meal follow-through later to identify the lesion, but they revealed a normal study, and on follow-up, they did not have any symptoms. They have been included in the conservative group and labeled as idiopathic intussusception.

Intraoperatively, out of the 16 patients, reduction was tried in 13 patients. Three patients had colocolic intussusception and they underwent primary resections without initial reduction. Reduction was successful in 11 (84.67%) patients out of the 13. In the rest three, resection was done after reduction and assessment of the lesion. In the three patients operated for peritonitis, necrosis and perforation of the bowel were found at the neck of the intussusceptum. Ileostomy was performed in one such patient with peritonitis. In two patients, after reduction, no organic lesion was found; one had a very mobile cecum for which the cecum was fixed to the parietal wall, and appendectomy was done. In the other patient, the ileocecal junction was the lead point, without any obvious pathology. The case with postoperative intussusception underwent reduction and adhesiolysis, which was sufficient. There was no in-hospital mortality or within 30 days.

Of the 18 patients, eight of the intussusceptions were in the ileocecal region (44.4%). There were seven (38.8%) cases of ileoileal intussusception and three (16.6%) cases of colonic intussusceptions. One patient had double invagination creating an ileoileocolic intussusception; it has been grouped under ileoileal because the primary pathologic junction was in the ileum.

Two patients (11.1%) improved without surgical intervention. They were normal on later examinations, so the exact cause the intussusception was not known. They were categorised under the idiopathic group, along with three other in which only ischemia, congestion, or gangrene were found on histopathological examination without a lead point and one in which just the ileocolic junction was the lead point without any pathology. Regarding the nature, 12 patients (66.6%) had proven leading lesions. Benign pathologies were seen in seven cases (38.8%) and malignant in five patients (27.7%) (Table 2). Among the malignant causes, which were all in the colon, four were secondary to adenocarcinoma of the colon, and one was secondary to a large B-cell Non-Hodgkin's lymphoma (NHL). Two cases of adenocarcinoma of the caecum and one NHL of the caecum caused the intussusception of the ileocolic junction. Hence they were grouped under the ileocolic intussusception although the aetiology were in the caecum.

Discussion

Adult intussusception is said to be rare. Recent reviews have shown that over a time span, presentation of adult intussusception to a single institution or multiple institutions in a country is extremely less.[7-14] Here in our institution, 18 patients over eight years are comparable in volume to these reports as well.

There was a slight female preponderance in our study and a mean age of around 50 years. The classic presentation of intussusception like abdominal pain, lump, and currant-jelly stools is rare and this triad has been found in only two of our patients (11.11%). Abdominal pain was the presenting symptom in all patients. There were three patients with intussusception who presented with peritonitis, the reason being delay in presentation to our hospital. Such a presentation has been reported in very few reports.[4]

There have been various results of studies regarding pathologies in adult intussusceptions. In our review, 12 patients (66.66%) had pathologic lead points. Six out of the 18 patients (33.33%) were idiopathic and did not have any organic lesions; only inflammatory signs could be seen in the caecum and the ileum without other obvious pathologies. Whether these were the cause or effect of intussusception was largely unknown. This is a

Table 2. Location, pathology, and classification of intussusceptions

	Site	Pathology	Classification	n	Total
1	Ileoileal	Inflammation and necrosis	Idiopathic	2	7 (38.8%)
		Leiomyoma	Benign	1	
		Submucous lipoma	Benign	1	
		Postoperative adhesions	Benign	1	
		Inflammatory fibroid polyp (ileoileocolic)	Benign	1	
		Conservatively improved	Idiopathic	1	
2	Ileocolic	Mobile cecum	Benign	1	8 (44.4%)
		Ileocolic junction	Idiopathic	1	
		Adenocarcinoma caecum	Malignant	2	
		Non-Hodgkin's lymphoma	Malignant	1	
		Inflammation and ulceration	Idiopathic	1	
		Capillary hemangioma	Benign	1	
		Conservatively improved	Idiopathic	1	
3	Colocolic	Adenocarcinoma colon	Malignant	2	3 (16.6%)
		Lymph node hyperplasia	Benign	1	

slightly larger figure compared to other studies. In Azar et al's study, only 7% were idiopathic, with other studies showing figures between 7-55%.[1,7-9,13-16] In our study, out of the 12 organic lesions, five were malignant (41.6%), all malignancies were in the large bowel, and their frequency was comparable to other series with reported malignancy rate between 27% and 43%.[15-18] However, unlike these other series, small bowel malignant lesions were not found in our review.

The optimal treatment for adult intussusception has always been a matter of controversy.[1-4,7-14] The standard treatment is laparotomy and evaluation. However, in our series, two of our patients experienced spontaneous reduction and improvement without surgical intervention. The decision not to operate may have been detrimental, but we were careful to exclude any possible pathology by colonoscopy and barium meal follow-through leading to the conclusion that they were cases of benign transient intussusceptions. Authors consider performing a laparotomy and resection of the segment of bowel with the intussusception because of the possibility of malignancy.[16-18] There are controversies associated with the option of preliminary reduction of the intussusception before resection versus primary resection without reduction. The theoretic objections to the reduction of bowel are: 1) intraluminal seeding and venous embolization of malignant cells in the region of ulcerated mucosa, 2) possible perforation during manipulation, 3) increased risk of anastomotic complications in the face of an edematous and inflamed bowel.[15,16] Based on the high incidence of underlying malignancy in adult intussusception, which may be difficult to confirm intraoperatively, the previous authors have recommended primary resection whenever possible without reduction.[1] But many other authors have also challenged this view, opting for resection without a reduction in selective cases only.[7-14,19,20] An aspect not discussed in any of the till-dated articles is the possibility of an ileoileocolic intussusception, which is inadvertently thought to be an ileocolic intussusception and which definitely involves a long segment of intestine than others. We had one patient with ileoileocolic intussusception, which if resected without reduction would have resulted in an unnecessary extensive resection for an otherwise benign pathology, an inflammatory fibroid polyp. In this series, we adopted a selective approach to resection, with resection straightaway in colocolic intussusceptions due to a high chance of malignancy and reduction in others so as to minimize the physiologic alterations which are so apt to occur in patients presenting with obstruction and peritonitis and to preserve the maximum length of the bowel. This maneuver may have been the key to decreasing the morbidity and mortality in our patients, meanwhile also decreasing the possibility of dissemination of malignant cells during the reduction of colocolic intussusception. This is also supported by the only systematic review and meta-analysis of adult intussusception by Hong et al.[19]

Conclusion

Adult intussusception is a rare entity, and nearly one-third of their causes are malignant. Surgery is the best recommended treatment, with or without a primary reduction of the intussusception; the latter can result in more limited bowel resection.

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Conflicts of Interest: none

References

1. Azar T, Berger DL. Adult intussusception. Ann. Surg. 1997 Aug;226(2):134–8.

2. Balik AA, Ozturk G, Aydinli B, Alper F, Gumus H, Yildirgan MI et al. Intussusception in adults. Acta Chir Belg. Jul-Aug 2006;106(4):409-12.

3. Pavlidis TE, Atmatzidis KS, Galatianos I, Aslanidou I, Mirelis C, Kontos C, et al. Intestinal intussusception in adults-our experience and review of the literature. Ann Gastroenterol. 2004;17(1):75-8.

4. Wang LT, Wu CC, Yu JC, Hsiao CW, Hsu CC, Jao SW. Clinical entity and treatment strategies for adult intussusceptions: 20 years' experience. Dis Colon Rectum. 2007 Nov;50(11):1941–9.

5. Weissberg DL, Scheible W, Leopold GR. Ultrasonographic appearance of adult intussusception. Radiology. 1977 Sep;124(3):791-2.

6. Kim YH, Blake MA, Harisinghani MG, Archer-Arroyo K, Hahn PF, Pitmanet MB et al. Adult intestinal intussusception: CT appearances and identification of a causative lead point. Radiographics. May-Jun 2006;26(3):733-44.

7. Kim JW, Lee BH, Park SG, Kim BC, Lee S, Lee SJ. Factors Predicting malignancy in adult intussusception: An experience in university-affiliated hospitals. Asian J Surg. 2018 Jan;41(1):92-7.

8. Balogun OS, Olajide TO, Afolayan M, Lawal A, Osinowo AO, Adesanya AA. An appraisal of the presentation and management of adult intussusception at a Nigerian Tertiary Hospital. Niger Postgrad Med J. Jul-Sep 2019;26(3):169-73.

9. de Clerck F, Vanderstraeten E, De Vos M, Van Steenkiste C. Adult intussusception: 10-year experience in two Belgian centres. Acta Gastroenterol Belg. Jul-Sep 2016;79(3):301-8.

10. Honjo H, Mike M, Kusanagi H, Kano N. Adult intussusception: a retrospective review. World J Surg. 2015 Jan;39(1):134-8.

11. Ozogul, B., Kisaoglu, A., Ozturk, G, Atamanalp SS, Yıldırgan MI, Aköz A. et al. Adult Intussusception: Clinical Experience from a Single Center. Indian J Surg. 2015 Dec;77(Suppl 2):490–4.

12. Gomes, A., Sousa, M., Pignatelli N, Nunes V. Adult intussusception: a single-center 10-year experience. Eur Surg. 2013;45:239–44.

13. Cakir M, Tekin A, Kucukkartallar T, Belviranli M, Gundes E, Paksoy Y. Intussusception: as the cause of mechanical bowel obstruction in adults. Korean J Gastroenterol. 2013 Jan 25;61(1):17-21.

14. Mostafa HA, Saad J, Hassan A, Zafar N. Adult intussusception. An overlooked diagnosis in the emergency department. Saudi Med J. 2014 Mar;35(3):285-91.

15. Wang N, Cui XY, Liu Y, Long J, Xu YH, Guo RX, et al. Adult intussusception: a retrospective review of 41 cases. World J Gastroenterol. 2009 Jul 14;15(26):3303-8.

16. Zubaidi A, Al-Saif F, Silverman R. Adult Intussusception: a retrospective review. Dis Colon Rectum. 2006 Oct;49(10):1546–51.

17. Barussaud M, Regenet N, Briennon X, deKerviler B, Pessaux P, Kohneh-Sharhi N, et al. Clinical spectrum and surgical approach of adult intussusceptions: a multicentric study. Int J Colorectal Dis. 2006 Dec;21(8):834–9.

18. Erkan N, Hacıyanlı M, Yıldırım M, Sayhan H, Vardar E, Polat AF. Intussusception in adults: an unusual and challenging condition for surgeons. Int J Colorectal Dis. 2005 Sep;20(5):452–6.

19. Hong KD, Kim J, Ji W, Wexner SD. Adult intussusception: a systematic review and meta-analysis. Tech Coloproctol. 2019 Apr;23(4):315-24.

20. Gupta RK, Agrawal CS, Yadav R, Bajracharya A, Sah PL. Intussusception in adults: institutional review. Int J Surg. 2011;9(1):91-5.