ADULT INTUSSUSCEPTION – A SURGICAL DILEMMA

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Background: Adult intussusception is rare. It is expected to be found in 1/30,000 of all hospital admissions, 1/1300 of all abdominal operations, 1/30–1/100 of all cases operated for intestinal obstruction and one case of adult intussusception for every 20 childhood ones. **Methods:** The authors encountered 4 cases of adult intussusception. M:F ratio was 1:1. Mean age was 47years. Small bowel obstruction was documented in all. They were investigated by radiographs, ultrasound exam, barium studies, endoscopy and CT scan. **Results:** All however were diagnosed at operation although some pre-operative suspicion was raised in one case. All had a laparotomy. Two were ileo-ileal and two ileo-caecal intussusceptions. One was chronic intussusceptions and three sub-acute. One intussusception had a malignancy (lymphoma) as a lead point. Two had a submucous lipoma at the apex. In an interesting case the suture knot from a recent small bowel anastomosis (2-3 weeks prior) was forming the lead point of the intussusception! The 2 ileo-ileal intussusceptions had segmental resection. Right hemicolectomy was done for the 2 ileo-caecal cases. "Target lesion" and leumen-within-leumen were the CT hallmarks on review. Retrospective barium enema review failed to show the intussusception. This may suggest the intussusception may have been recurrent or chronic. All 4 recovered uneventfully and remained well. One patient was referred for chemotherapy for intestinal lymphoma. **Conclusion:** Adult intussusception remains a rare cause of abdominal pain. The treatment almost always is surgical.

Key words: Adult Intussusception

INTRODUCTION

Non-specific abdominal pain is the commonest cause of acute surgical admissions for abdominal pain. The diagnosis may not be established in 40-65% of the patients. This may run into chronic pain. The re-admission rate over first two years as a result of acute or chronic non-specific abdominal pain may be 30%. The investigations are often directed towards excluding ailments like acute appendicitis, intestinal obstruction and the like. In chronic pain the usual target of investigation is malignancy, inflammatory bowel disease, acid peptic disease and hepato-biliary causes (also gynaecological). This network of clinical assessment and imaging/endoscopy often 'catches' the diagnosis on most occasions. But not always!
Hence the abdomen has been described as a temple of surprises.

MATERIAL AND METHODS

The authors encountered 4 cases of adult intussusception (AI). M:F ratio was 1:1. Mean age was 47years. Small bowel obstruction was documented in all. They were investigated by random, non-targeted investigation including radiographs, ultrasound exam, barium studies, endoscopy and computerised tomography (CT) scan.

A 65-year old female presented with an 8-month history of intractable 'back-to-front' abdominal cramps. She had two episodes of dark red bleeding per-rectum. Past medical history included appendectomy and hysterectomy followed by deep vein thrombosis and pulmonary embolism. Plain radiograph, two abdomino-pelvic ultrasound examinations and upper gastrointestinal (GI) endoscopy (twice) were normal. A lower GI contrast study demonstrated extensive diverticular disease. In view of persistent symptoms a small bowel follow-through was undertaken which revealed terminal ileal constriction and the CT demonstrated an atypical soft tissue mass in the ileo-caecal region with possibly leumen-within-leumen (Figure 1). Because of the uncertainty of the diagnosis a laparotomy was performed. It revealed chronic ileo-colic intussusception for which right hemicolectomy was carried out. The apex was being formed by what looked like a submucous lipoma (Figure 2).

Histology revealed a benign, chronic ileo-colic intussusception with oedematous and ulcerated mucosa at the apex possibly triggered by a submucous lipoma, which may have auto-amputated. The patient recovered promptly and was well at the 6-week follow-up. The time lapse between the onset and the diagnosis was approximately 8 months, that between the first hospital presentation and the diagnosis being nearly 5 months.

An 18-year old male was re-admitted only 2 weeks post-appendicectomy with clinical sub-acute small bowel obstruction. Ultrasound suggested an ileo-colic intussusception mass. Laparotomy revealed an ileo-colic intussusception with a malignancy (non-

Hodgkin lymphoma) as a lead point. Right hemicolectomy was performed. He recovered steadily and was referred for chemotherapy.

A 60-year old female was admitted as an emergency with sub-acute small bowel obstruction. The radiographs did not suggest a cause. Laparotomy demonstrated simple ileo-ileal intussusception due to a submucous lipoma. Segmental small bowel resection lead to recovery.

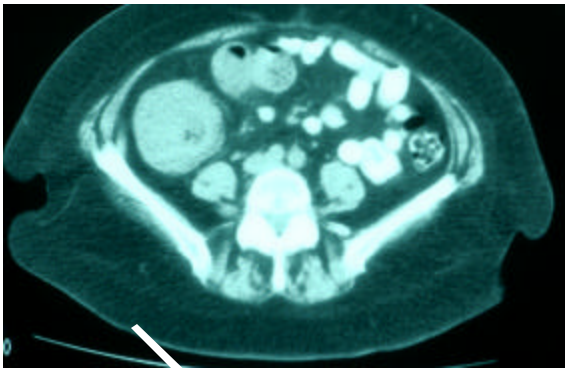

Figure 1: CT scan of the abdomen with the arrow pointing at the "targetlesion" i.e leumen-within-leumen – a hallmark of intussusception

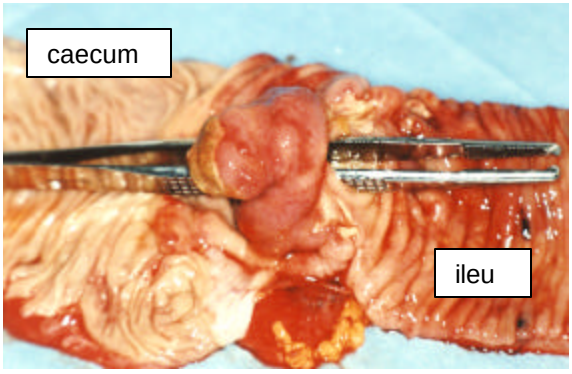

Figure 2: The apex of Ileo-caecal intussusception is peeping into the caecum. The forceps is lying anti-peristaltic.

A 45-year old male was re-admitted 2-3 weeks post laparotomy for resection anastomosis of a crohns stricture. He had run into sub-acute small bowel obstruction after a brief period of return of bowel activity. Again the radiographs were unhelpful in the final diagnosis. Laparotomy revealed retrograde ileo-ileal intussusception with the suture knot from the recent anastomosis forming the apex or the lead point.

RESULTS

All four patients were diagnosed at operation and surgical treatment lead to prompt recovery. "Target lesion" and leumen-within-leumen were the CT hallmarks on review. Retrospective barium enema review in a patient failed to show the intussusception. This may suggest the intussusception may have been recurrent or chronic.

DISCUSSION

Intussusception was usually fatal till early 20th century. John Hunter described the clinicopathological characteristics. Sir Fredrick Treves, an eminent 19th century surgeon described the plan of treatment, which by and large remains valid to date.[29]

Adult intussusception is rare. It is expected to be found in 1/30,000 of all hospital admissions[3], 1/1300 of all abdominal operations[3], 1/30–1/100 of all cases operated for intestinal obstruction[33,3] and one case of adult intussusception for every 20 childhood ones[3,8,26]. The mean age at presentation tends to be in the 6th decade of life[3,15,33]. It may be acute or chronic (persistent or intermittent[2]) in addition to being 'silent'[32]. The chronic intussusception may have lasted in some instances for a year before the diagnosis.

The male to female ratio is 1:1-1.3[11,15,33] (3.6:1 for children[35]). The age range is from intra-uterine life to the 9th decade[15], the mean being 54.4years[3] for adults and 2.2years[35] for children. Higher age at intussusception may point to underlying malignancy since the mean age for benign cases is 44 years as opposed to 60 years for the malignant[15]. The childhood variety is common and responds well to reduction by pneumatic method (success 90%[38]), barium method (70%[38]) and saline hydro-reduction (67%[38]). Surgery is reserved for refractory or recurrent cases. In this way it is distinct from the adult type(Table 1).

Table 1: Comparison between adult & childhood intussusception

	Adult	**Childhood**
Incidence	rare	20 times as common[3,8,26]
Mean age	54.6yrs[3]	2.2yrs[35]
m/f ratio	1:1-1.3[11,15,33]	3.6:1[35]
Idiopathic	6.6-15%[3,4,15,33]	41%[35]
Treatment	surgical[3,4,25,37,39]	non-surgical (67-90%)[38]
Diagnostic yield:		
	CT 52%[33]	-
	contrast 41%[33]	70%[38]
	US 32%[33]	67%[38]

Table 2: Reported rare causes of intussusception

ca appendix[28]
adenomyoma in a Meckle's diverticulum[37]
submucous lipoma[10]
extramedullary haematopoeitic tumour[31]
haemangioma of small bowel[34]
endometriosis of terminal ileum[20]
Peutz Jegher's polyp[30]
metastatic tesicular germ cell tumour[23]
'vanished' colonic tumour with deposits in glands[27]
pneumatosis coli[5,12]
coeliac disease[24]
ileal aberrant pancreas[21]
duodenal villous adenoma[18]
metastatic melanoma of ileum[6]
bowel wall haematoma[19]
gastroduodenal due to gastric carcinoma[17]
others

Even in adult cases the triad of cramp, vomiting and rectal bleeding is often present[4].

Towards the diagnosis, often being hitherto unsuspected, the CT/MRI may have a diagnostic yield of 52%[33], as compared to 41% for contrast GI studies[33] and 32% for the ultrasound[33]. When the diagnosis is CT-detected, about 48% may be radiologically idiopathic[22], 30% malignant[22] and the rest benign. The classical CT/MR finding is the 'target lesion'[13,25] formed by bowel-within-bowel, a 'double ring'[16] or a 'coiled spring'[1] appearance. Others are presence of an intra-luminal soft tissue mass and an eccentric mesentry[2]. In a study, a mass containing fat stripes on CT was seen in 100% of the cases[11].

In stark contrast to the childhood form, the adult intussusception almost always requires surgery[3,4,25,37,39]. The chronicity may not allow successful pneumatic or hydrostatic reduction due to cross-scarring between the intussusceptum and the intussuscipiens. More importantly the lesion at the apex (the 'lead point') may escape detection. Whereas the intussusception itself has a very good prognosis[33], the decisive prognostic factor is expected to be the nature of the lesion leading to the process.

Technically the operation itself is seldom tedious anymore than a conventional resection and anastomosis. A view is held to reduce the intussusception at the operation as much as safely possible followed by appropriate (and therefore limited) resection. This may preserve bowel length. Also it may avoid injury to the superior mesenteric vessels[36] if the intussusception mass were engulfing major part of the mesentery.

Others recommend resecting without reducing too enthusiastically[3,7] and especially colonic intussusception[15]. This is thought to increase the likelihood of bowel injury or ischaemia. In addition manipulation may lead to dissemination or perforation of malignancy. The same centre however may be practising both the approaches (58% resection alone vs. 42% reduction-resection)[15].

The apex of the intussusception carries the lesion which originally triggered it. It could harbour a wide range of pathological process. Histology may reveal commonly expected causes as carcinoma of the colon, a polyp or a submucous lipoma or those as rare as a surgical curiosity (Table 2).

The overall incidence of malignancy at the apex of an intussusception is 43-56%[3,11]. Colocolic intussusception may be secondary to a carcinoma in up to 43-80% of the cases[3,15]. The commonest nevertheless is the small bowel type (69-81% of all[3,4,15]) but may be malignant in 36-48%[3,15] of the cases. Idiopathic intussusception occurs in only 6.6-15% of the adult cases[3,4,15,33] as compared to the children when it may be as much as 41%[35].

In a series of 8 malignant small bowel intussusceptions and 4 those of large bowel, all the enteric lesions were metastatic while all the colonic ones, primary[15]. The index of suspicion contributes towards the diagnosis[7].

CONCLUSION

Adult intussusception remains a rare cause of persistent or intermittent chronic abdominal pain. In contrast to its paediatric counterpart, the treatment almost always is surgical.

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