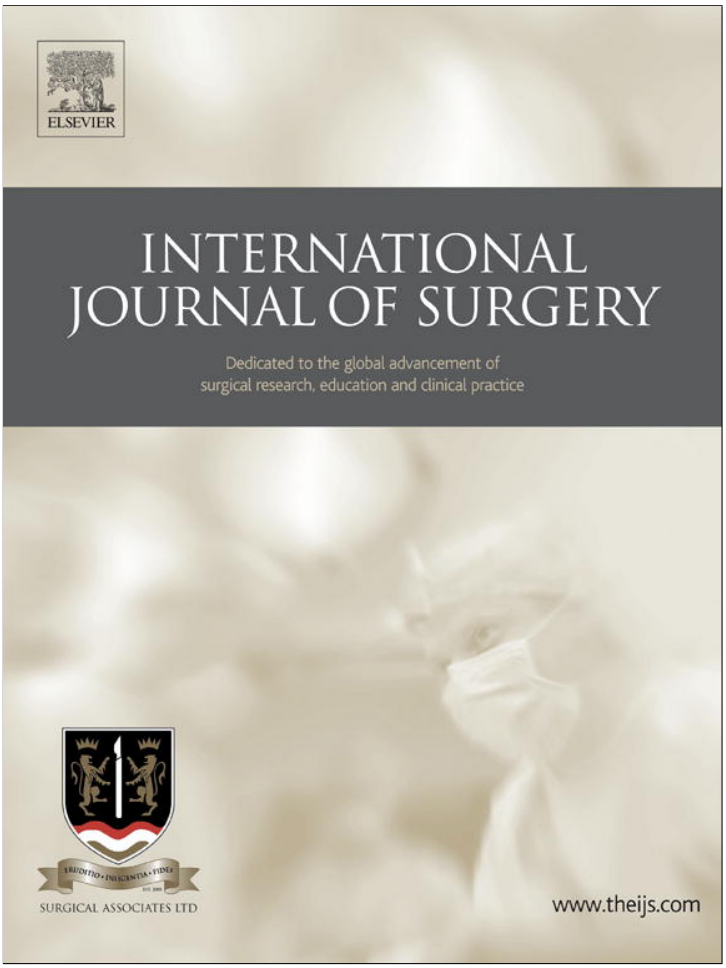

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Clinical presentations, diagnosis and treatment of adult intussusception, a 20 years survey

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ABSTRACT

Background: Intussusception is a rare cause of intestinal obstruction in adult patients. The etiology of malignant nature has been reported to be more frequent in this group and the diagnosis is usually made at operation. Few reports are published for this clinical entity from Middle East.
Methods: The medical records of all adult patients admitted with the diagnosis of intussusception in a tertiary care center between 1989 and 2009 were reviewed.
Results: There were 15 cases of intussusception in this 20 years period. The mean age of patients was 33.6 years, 8 females and 7 males. In 14 cases the leading point of intussusception was in small bowel. Resection and primary anastomosis was the selected procedure in 13 patients; one patient underwent colostomy and one reduction alone. Malignant cause was detected in only 2 cases. 7 Patients were operated on with diagnosis of intussusception according to imaging findings. The diagnosis was made at operation in the remaining 8 cases. Only one anastomotic leakage occurred in patient on systemic steroids.
Conclusion: The mean age of our patients is relatively low with more benign etiologies in small bowel. The CT scan may be the most helpful imaging modality in suspected cases but decision for operation in acute presentations should not be deferred for definite diagnosis. Resection of the involved bowel segment and primary anastomosis is associated with a good outcome.

1. Introduction

Intussusception was first reported by Barbette of Amsterdam in 1674[1] later by John Hunter in 1789.[2] Sir Jonathan Hutchinson was the first surgeon who operated intussusception on a child in 1871.[3] Intestinal intussusception in children is a common disorder; however, it is a rare clinical entity in adult patients. About 5% of all cases of intussusceptions occur in adults. Intussusception accounts for 1–5% of intestinal obstructions in adult patients.[4,5]

Diagnosis of intussusception in adults is often difficult, often made at laparotomy.[6] About 65% of adult intussusception is associated with malignancy,[7] and therefore radiologic decompression is not addressed in adults. 70–90% Of adult patients with intussusception require definite treatment, usually surgical resection.[5] The best surgical approach in adult intussusception has been controversial. Manual reduction of the intussusception followed by definitive surgical resection has been advocated.[7] In this study, we report our experience on adult intussusception to clarify the cause, clinical features, diagnosis, and management of this uncommon disease in Iran.

2. Materials and methods

The medical records of all patients aged 18 years or older admitted with a diagnosis of intussusception in a tertiary care center, Tehran, Iran between 1989 and 2009 were reviewed. Data were gathered from patients' sheets, operative notes, and pathology reports. The following information was recorded: patient age, gender, symptoms and clinical signs. Operative and pathologic records were reviewed to determine the location and viability of the involved segment, method of surgical management, and post-operative outcome.

3. Results

There were 15 patients of adult intussusceptions during 20 years: 8 females (53.3%), and 7 males (46.7%). The youngest patient in this series was aged 18 years and the oldest was aged 56 (33.66 ± 12.68) years .The most common presenting

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complaint was abdominal pain, which was observed in 14 (93.3%) patients. Other symptoms and signs included nausea, vomiting, diarrhea, constipation, bleeding per rectum, diarrhea, abdominal mass, coffee-ground vomiting, and fever (Table 1). The diagnosis of gastrointestinal intussusception was made preoperatively in only 7 (46.7%) patients. Intestinal obstruction was the preoperative diagnosis in 4 patients and 2 patients presented with peritonitis. In one patient intussusception occurred following endoscopic polyp resection and bleeding. In another case it was diagnosed incidentally during explorative laparotomy in a trauma patient.

Plain abdominal radiography was carried out in 13 patients, but gastrointestinal intussusception was not the impression in any of those. Abdominal ultrasound was performed in 10 patients, which was diagnostic in 3 cases. Abdominal computed tomography (CT) was performed in 7 patients, of whom 5 were diagnosed with an intussusception. Colonoscopy was carried out in 3 patients, and none was diagnostic. A small-bowel series was performed in 2 patients, and one patient had findings suspicious of an intussusception due to Peutz–Jeghers disease (Table 2).

The majority of intussusceptions were in the small Bowel: 4 (26.7%) jejunojejunal, one (6.7%) jejunoileal, 6 (40%) ileoileal type. There were 3 (20%) cases of ileocolic and 1 (6.7%) case of colocolic intussusceptions. In 14 cases open laparotomy and in 1 case laparoscopy was performed. Segmental intestinal resection and primary anastomosis were done in 13 (86.7%) patients. One case was managed with colostomy instead of primary anastomosis. Reduction with milking maneuver (without resection) was performed in one case.

13(86.7%) Cases had no postoperative complication. One patient complicated with leakage of anastomosis. This patient was on corticosteroid because of Henoch–Schönlein disease. One patient developed acute tubular necrosis following surgery.

The histopathologic cause of intussusception was identified in 14 cases. In one case no specimen was available because reduction without resection has been carried out. (Table 3). Benign pathologies were found in 12 cases (80%) and malignant in 2 patients (13.3%). Benign process included hamartomatous polyp, chronic granulomatosis inflammation, benign gastrointestinal stromal tumor (GIST), pseudopolyp, lipoma and angiolipoma. Of the malignant causes, one was due to malignant small bowel GIST. One was secondary to spindle cell tumor that was metastatatic from right atrium. The sarcomatous lesion of the heart was operated about one year back. The patient developed two attacks of small bowel obstruction because of intussusception; each was treated with segmental bowel resection. The case of colocolic intussusception was a result of a submucosal lipoma in transverse colon. This patient developed pancreatic head adenocarcinoma after 1 year of follow up. No colorectal or rectorectal intussusception were identified in this study.

Table 1
Symptoms and signs of patients with intussusception.

	No.	%
Pain	14	93.3
Nausea	11	73.3
Vomiting	11	73.3
Constipation	5	33.3
Bleeding per rectum	5	33.3
Diarrhea	5	33.3
Abdominal mass	4	26.7
Coffee-ground vomiting	2	13.3
Fever	1	6.7
Weight loss	1	6.7
Total	15	100

Table 2
Preoperative diagnostic studies in 15 patients with intussusception.

	No. performed	No. suggestive of intussusception
Plain X-ray of the abdomen	13	0 (0%)
Abdominal ultrasound	10	3 (30%)
Abdominal computed tomography	7	5 (71.4%)
Colonoscopy	3	0 (0%)
Small-bowel series	2	1 (50%)
Barium Enema	2	1 (50%)

4. Discussion

There were 15 cases of adult intussusceptions in a period of 20 years. Mean age was 33.66 (18–56) years. The mean age of our patients was younger than previous reports. The mean age has been reported to be 57.1 years in a study from Canada,[8] 58 years from Taiwan,[10] 51 years from France[11] and 38.6 years from Turkey.[12]

Intussusception in adults presents with acute, subacute, or chronic non-specific symptoms.[7] Erkan et al. reported that 61.5% of patients presented with acute symptoms and underwent an emergency laparotomy.[13] In another report, 46% of patients had acute symptoms.[11] 53% Of our patients presented with chronic non-specific symptoms and 47% of cases had acute or subacute symptoms. The most common presenting symptom was abdominal pain (93.3%). The classic pediatric presentation of intussusception including abdominal pain, mass, and blood per rectum, is rarely found in adults.[5] In general, our preoperative diagnosis rate was 46.7%. Preoperative diagnostic accuracy rate ranges between 30 and 90 percent in other reports.[4,10,11,13] This rate became better in recent reports.[10,11] The possible reason is the evolution of the radiological procedures and widely used abdominal CT for diagnosis.

Several imaging techniques may help to precisely identify the causative lesion preoperatively. Plain abdominal x-ray has been typically the first diagnostic tool, but it was not diagnostic in our series. Abdominal CT scan has been shown to be a useful method in evaluation of these patients.[14] On CT scan, intussusception appears as a “sausage-shaped” mass in the longitudinal axis, and as a “target” mass in the transverse axis. In our study, 5 of 7 preoperative abdominal CT scans were diagnostic. Abdominal CT scan has been reported to be the most useful imaging modality[15] and availability of this facility probably is the cause of better results in recent series.[10]

Adults with intussusception have an organic lesion as a lead point in 70–90 percent of cases, 20–50 percent of them are malignancies.[4,16,17] In our review, only 13.4 percent of patients had malignant lesions. This may show the low incidence of small bowel malignancy in Iran.

Intussusceptions have been classified according to the location and the presence of malignancy. In our study 14 (93.3%) cases were enteric intussusceptions with only two malignant cases. In Barussaud et al. series,[11] most of the lesions were enteric (66%) and most of the colonic lesions were malignant (54%). These findings have been reported in other series.[4,7,14,19]

There is no universal approach to the treatment of adult intussusception. Hydrostatic reduction for adult intussusception was not advised as most cases were associated with a pathological lesion, along with a relatively high rate of malignancy.[9,12,19] Surgical approach by laparotomy or laparoscopy is recommended. There has been controversy associated with the operative options: reduction or no reduction, resection or no resection. Many authors recommend primary resection whenever possible.[4,5,8,18] Reduction should not be attempted if signs of bowel ischemia or inflammation

Table 3
Etiology of intestinal intussusceptions.

Count		Type of intussusception					Total
		Jejunojejunal	Jejunoileal	Ileoileal	Ileocolic	Colocolic	
cause	No leading point	1	1	0	1	0	3
	Hamartomatous	2	0	1	0	0	3
	Chronic granulomatosis inflammation	0	0	1	0	0	1
	Benign GIST	0	0	1	0	0	1
	Pseudopolyp	0	0	1	0	0	1
	Malignant GIST	0	0	0	1	0	1
	Spindle cell sarcoma	1	0	0	0	0	1
	Angiolipoma and lipoma	0	0	1	0	0	1
	Lipoma	0	0	0	1	1	2
	Report not available	0	0	1	0	0	1
Total		4	1	6	3	1	15

GIST: Gastrointestinal Stromal Tumor.

are present.[15] In our series, all cases underwent resection and primary anastomosis except one.[20]

The outcome of surgery in adult intussusception is generally good.[10,11] We had only one case of anastomotic leakage in our series that was on corticosteroid therapy. The long term prognosis is related to the underlying disorder.

Laparoscopic approach to these patients may be of more benefit. Although we had only one case of laparoscopic exploration and reduction of long jejunoileal intussusceptions with resection and primary anastomosis through a 3 cm umbilical incision, but it seems that this technique could be used routinely not only for definite diagnosis, but also for proper surgical intervention.

5. Conclusion

According to the results of our study, the mean age of the patients was younger than other reports. The CT scan is a helpful imaging technique for diagnosis of enteric intussusceptions. Definite diagnosis usually is made at laparotomy. Benign etiologies in small bowel were more common than malignant colon lesions. Resection of the involved bowel segment and primary anastomosis was associated with good outcome.

Conflict of interest
None to declare.

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Ethical approval
Not required.

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