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Acute Intestinal Invaginators in Adults: Concerning 10 Cases in the General Surgery Department of the Prefectural Hospital of Koundara, Guinea

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ABSTRACT

Introduction: This is a rare condition in adults that represents 1 to 5% of intestinal occlusions; intussusception in adults often leads to the discovery of an underlying cause, which may be tumor-related or not. The aim of this work is to report the experience of our department in the management of acute intestinal intussusception in adults.

Patients and Methods: This was a descriptive retrospective study over a period of eight (8) years, focusing on the records of patients of both sexes aged over 15 years, in whom the diagnosis of acute intestinal intussusception was made and confirmed intraoperatively. Epidemiological, clinical, therapeutic, and prognostic variables were studied.

Results: We collected 10 cases, representing 0.26% of interventions and 2.5% of acute intestinal obstructions. The average age was 39.4 years, with extremes of 15 and 70 years. A male predominance was noted with a sex ratio of 1.5. Abdominal pain was reported in all patients; eight (08) patients presented with bowel obstruction. The abdominal X-ray revealed hydro-aerial levels in 8 cases. The abdominal ultrasound showed a target sign in 3 cases. Laparotomy was performed through a median supra and subumbilical incision for all cases. 6 ileo-ileal intussusceptions, including 3 due to tumors, were observed. Ileal resection was performed in 5 patients. The postoperative outcomes were good in 7 out of 10 patients.

Conclusion: Intestinal invaginations in adults have been rare. Treatment is always surgical in adults, with resection being more frequent than simple reduction; thus, improving prognosis depends on enhancing effective diagnostic and resuscitation methods.

Keywords:

Acute intestinal invagination, X-ray, Anatomopathology, Surgery, Pathological anatomy.

Introduction

Acute intestinal "intussusception" in adults is defined as the pathological insertion of a segment of intestine into the underlying segment, like a finger of a turned glove, in a person aged 15 years or older, causing intestinal obstruction [1]. It is a rare condition in adults, representing 1 to 5% of intestinal obstructions [2]. In contrast to childhood forms, which are primitive in 90% of cases, intestinal intussusceptions in adults often lead to the discovery of an underlying organic cause, which may be tumor-related or not [3]. It is common in Africa and rare in European adults. It often develops in a chronic manner, and its preoperative diagnosis is challenging [4]. Treatment, which is always surgical, often does not allow for reduction through hyperpressure under radiological control. Most authors recommend intestinal resection without an attempt at reduction [5].

Anatomopathology is necessary to confirm the etiological diagnosis. The prognosis is related to the duration of evolution, the extent of lesions, and the nature of the cause. BALDE H in Guinea reported in 2019 a series of 10 cases including 1 death over a period of 9 years. The aim of this work is to report our service's experience in managing acute intestinal invaginations in adults through a retrospective study of 10 cases.

Material and Methods

This was a descriptive retrospective study over a period of eight (8) years (from January 1, 2016 to December 31, 2023), covering the records of patients of both sexes aged over 15 years, in whom the diagnosis of acute intestinal invagination was made (or discovered during surgery) and operated on. Patients under 15 were not included.

Results

During the study period, 10 cases of acute intestinal invagination in adults were recorded in the surgery department of the Koundara Prefectural Hospital, out of a total of 400 cases of intestinal obstruction among 3840 surgical interventions. The frequency of acute intestinal invagination compared to intestinal obstructions was 2.5%. However, this frequency compared to the total admissions in visceral surgery was 0.26%. The average age was 39.4 years, with extremes of 15 and 70 years. A male predominance was noted, with 6 men to 4 women, resulting in a sex ratio of 1.5. Clinically, abdominal pain was present in all patients; eight (08) of them, or 80%, were received in the context of intestinal obstruction, and two (02), or 20%, of the patients presented a chronic picture consisting of abdominal pain, constipation with alteration of general condition. Two (02) patients had rectal bleeding. The intussusception mass was palpated in three patients (Table 1).

The abdominal X-ray without preparation, performed on all

patients, revealed hydro-aerial levels in 8 cases (Figure 1). Abdominal ultrasound performed on 4 patients showed a target appearance suggestive of intestinal invagination in 3 cases, and a thickening of the intestine in 1 case. The diagnosis was made preoperatively in three out of ten cases, or 30%. All patients underwent emergency surgery. The surgical approach was median, above and below the umbilicus in all cases. The exploration revealed:- 6 ileo-ileal invaginations, 3 of which were associated with a tumor and 2 with necrosis;- 2 ileocecal invaginations, one of which was associated with a tumor; and- 2 left colonic invaginations associated with a tumor (Figure 2).

Figure 1: Abdominal distension.

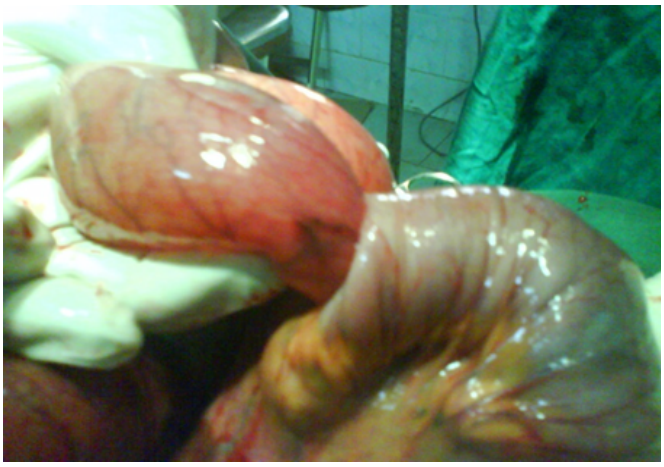

Figure 2: Ileo-ileal invagination.

Table 1: Distribution of Signs of IIA.

Clinical signs	Number of cases
Abdominal pain	10
Vomiting	8
Stopping of the materials and gases	8
abdominal mass	3
Abdominal distension	5
Fever	4
Bloody mucus	3
Abdominal defense	2
Rectal bleeding	2

The operative gesture had been variable according to cases dominated by ileal resection followed by ileo-ileal anastomosis (Table 2).

The immediate operative outcomes were simple in 7 patients, with 3 cases of parietal suppuration, one anastomotic dehiscence in one patient, and one death recorded in the context of septic shock. The pathological anatomy result of the resection specimen found an organic cause of the intussusception in six (06) cases, or 60% (Table 3).

Table 2: Surgical procedures performed.

Surgical procedures performed	Number of cases
Ileal resection + termino-terminal ileo-ileal anastomosis	5
Simple manual invagination	2
Left hemicolectomy	2
hemicolectomy Right	1
Total	10

Table 3: Anatomopathological Result.

Result of the anatomopathological examination	Number of cases
Colonic adenocarcinoma	1
Intestinal lipomas,	3
Benign inflammatory adenopathy	1
Non-adenomatous inflammatory polyp	1

Discussion

Acute intestinal invagination is a rare surgical emergency in adults, most often having a malignant or benign organic cause. This finding has led most authors to recommend surgical exploration of any acute intestinal invagination in adults with principled segmental resection. In our study, we noted ten cases of acute intestinal invagination in adults, representing a frequency of 2.5% in relation to the etiologies of Acute Intestinal Obstruction (AIO), with an average annual frequency of 1.3 cases. This rarity is reported in the literature where they would account for 1 to 5% of acute intestinal obstructions. From an etiological point of view, the condition is primitive in children in 90% of cases, while in adults, an organic cause is found in 70 to 90% of cases. If this condition is very rarely observed in developed countries, it is, on the contrary, relatively common in Africa, particularly in the intertropical zone. The reasons for these geographical differences are unknown, and certain factors such as diet and parasites are mentioned. The average age of patients was 39.4 years, with extremes of 15 and 70 years. Thus, this pertains to young adults, which corroborates with several authors where the average age ranges from 33 to 44 years. The sex ratio is 1.5. It is difficult to find a predominance linked to sex or age group. The male predominance noted in our study is reported in several series. Konaté I et al. reported a female predominance of 6 women to 2 men 80% of our patients are received in emergencies. The symptomatology would be dominated by signs of acute intestinal obstruction, which is observed in forms seen in Europe in 10 to 30% of cases and in 75 to 100% of cases in Africa [2,4,7,8]. Vomiting, the cessation of stool and gas were the most frequent in our study (Table 1).

During the physical examination, abdominal palpation is a fundamental element of great diagnostic value; an abdominal mass is palpated in 3 out of 10 patients; some authors have reported figures ranging from 17.64% to 58.5%. Radiological explorations play a crucial role in the preoperative diagnosis of this condition. In our context, the plain abdominal X-ray was the only imaging examination available, as CT scans and ultrasounds were not available in emergencies (Figure 1). The plain abdomen was performed on 100% of the patients and revealed hydro-aeric levels of the type typical in intestinal obstruction in 6 patients and mixed hydro-aeric levels in 2 patients. In our study, the abdominal ultrasound performed on 3 patients revealed a target image that helped strengthen the presumptive diagnosis. It can indicate the long segment of invagination by visualizing the successive layers of the digestive walls of the invaginated loops and the receiving loop, with the mesenteric fat taken by the invaginated loop slightly off-center in the middle. In cross-section; the image is in a rosette, made up of a peripheral crown that is rather hypoechoic consisting of several digestive layers and featuring an eccentric hyper-echoic crescent corresponding to the incarcerated mesentery. In longitudinal section; the so-called sandwich image corresponds to the succession of hypoechoic digestive wall layers compared to the more central and hyper-echoic mesenteric fat. The zone of penetration of the invaginated loop into the loop. Abdominal ultrasound combined with color Doppler can, in some cases, reveal the disappearance of venous and arterial hyperemia of the invagination sausage, suggestive of ischemic necrosis. Computed tomography increases the sensitivity of diagnosis. It allows for the diagnosis of the obstructive syndrome, its mechanism, namely the invagination, its precise location, and shows its cause. It allows for the objective assessment of thickening of the digestive wall associated with adenopathies in the case of lymphoma, an intraluminal lesion of fatty density in the center surrounded by a digestive wall in the case of lipoma, or of tissue density in the case of polyp [6,15]. In adults, the treatment of an intussusception is always surgical; most authors agree on the necessity of exploratory laparotomy. There is indeed no room for reduction by hyperpressure under radiological control given the frequency of tumor-related etiological forms.

In fact, in colo-colic or ileo-colic intussusceptions: due to the high incidence of cancer as a causal lesion, primary resection (right or left colectomy) is recommended by the majority of authors to limit the risks of metastatic dissemination. Meanwhile, in cases of small bowel intussusceptions, if there is a long segment of intussuscepted intestine, it seems permissible to attempt a preliminary reduction to limit the extent of the excision since malignant tumors are rare at this level. Laparoscopy currently constitutes a real means of diagnosis and sometimes treatment of intestinal intussusception of the small intestine [10]. In our study, the median laparotomy above and below the umbilicus was performed on all our patients. Ile ileal intussusception was more frequent than other anatomical forms in our study (6 cases in our series). This predominance of the ileo-ileal form is reported in several series [3, 4, 10, 12, 15]. In our study, tumor etiology was reported in 6 cases, or 60% of the cases, and in the literature, tumor etiology was noted in 41.4% to 74% of cases [4,7,15]. For Boubou M et al, this frequency was 100% [5], Balde H et al reported it in 70% of cases [6]. Intestinal necrosis was observed in two patients, or 20% in our series, while Balde H et al reported necrosis in one-third of cases [6], and Lebeau et al in 50% of cases [4]. In our series, intestinal resection was performed in 8 cases, or 80%, with simple reduction in 2 cases. These results are similar to those of other authors who reported an intestinal resection rate of 95% of cases compared to simple reduction in 5% of cases [13]. This higher frequency of intestinal resection is reported by several authors [4,7,15].

The immediate postoperative outcomes were simple in 7 patients, or 70%, with 3 cases of wall suppuration, an anastomotic dehiscence in 1 patient, and 1 case of death. These results are consistent with those found by Balde H et al., who reported simple immediate postoperative outcomes in 8 patients, 1 case of wall suppuration, and one death. The case of death in our study occurred in a patient operated on for ileo-ileal intussusception with necrosis, who underwent a term-to-term ileo-ileal anastomosis after ileal resection; he died on postoperative day 5 due to a picture of peritonitis. Postoperative peritonitis leads to burning of the peritoneum and intra-abdominal organs associated with infection responsible for multi-organ failure, shock, and ultimately death. Traoré et al. reported a mortality rate of 5%.

Conclusion

Intestinal intussusception in adults is often secondary to an organic lesion: tumors or inflammation Intestinal invaginations in adults have been rare in our series, where they predominantly occurred in young adult males. The preoperative diagnosis of

acute intestinal invagination in adults remains challenging, with ileo-ileal forms being more frequent. Tumoral etiology was noted in the majority of cases. Treatment is always surgical in adults, with resection being more common than simple de-invagination; thus, improving prognosis relies on enhancing diagnostic and effective resuscitation methods.

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