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There is more than meets the eye

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Small bowel obstruction due to congenital adhesion bands in the virgin abdomen. There is more than meets the eye

INTRODUCTION: *Adhesive small bowel obstruction (SBO) represents a common surgical emergency leading to increased hospital admissions. Most patients presenting with adhesive SBO have a history of previous abdominal surgery. Although bowel obstruction secondary to congenital adhesion bands is rare, it should not be ruled out even in patients with a "virgin abdomen".*
CASE REPORT: *We present two rare cases of adult patients with SBO due to congenital adhesions. The first patient was transferred to the operating room, secondary to a closed-loop obstruction diagnosis. Two congenital adhesion bands were detected intraoperatively, then coagulated and divided. The second patient was surgically treated due to worsening abdominal pain. An adhesive band was identified occluding the ileum on surgical exploration, then ligated and excised. Both patients recovered uneventfully, without any recurrence of symptoms on the follow-up.*
DISCUSSION: *Single adhesive bands are more commonly found in cases with a "virgin abdomen". Meanwhile, solitary bands usually lead to bowel strangulation and ischemia, mostly mandating operative management. Interestingly, a computed tomography scan may confirm the diagnosis of bowel obstruction, whereas water-soluble contrast agents may help predict the need for surgical treatment. Besides exploratory laparotomy, laparoscopic surgery is gaining ground as an effective SBO diagnosis and management approach.*
CONCLUSION: *Adhesive SBO due to congenital bands is a rare condition, particularly in adults, with potentially life-threatening complications. With the aim of prompt diagnosis and treatment, a high index of suspicion and awareness should be maintained even in patients without previous medical or surgical history.*

KEY WORDS: Small bowel obstruction, Congenital adhesion bands, Virgin abdomen

Introduction

Small bowel obstruction (SBO) remains a common surgical emergency leading to a significant increase in hospital admissions and healthcare costs [1]. Interestingly, SBO is responsible for approximately 12-16% and 20% of emergency surgical admissions and procedures, respectively [1]. In most cases, the leading etiology of SBO is the formation of adhesions. In fact, 80% of patients presenting with SBO due to adhesions have a history of previous abdominal surgery [2].
Adhesions are classified as either congenital or acquired [1]. Although a congenital adhesion band is a rare cause of SBO, particularly in adults, it could lead to severe and life-threatening complications. Therefore, what is far more important is that SBO secondary to congenital adhesions should not be ruled out, even in the absence of prior abdominal surgery, trauma, radiotherapy, or known intra-abdominal inflammatory disease (a condition referred to as "virgin abdomen") [3].

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The most common site of congenital adhesions is around the ileum, followed by the mesentery root, colon, jejunum, liver, and omentum [4]. The spectrum of clinical manifestations in SBO due to congenital adhesion bands may range from mild to critical, particularly in patients with strangulated bowel obstruction leading to bowel necrosis, perforation, and eventually death. In addition, diagnostic imaging methods, especially computed tomography (CT) scans, may confirm the diagnosis of SBO and help exclude other factors that could cause intestinal obstruction [3].

"Never let the sun rise or set on a bowel obstruction" is the traditional dictum that has been broadly taught in surgical training, highlighting the significance of urgent surgical evaluation and intervention for obstructing lesions. Therefore, a high index of suspicion and awareness of congenital adhesions as a potential cause of SBO in a virgin abdomen could lead to better clinical outcomes through early diagnosis and treatment. Herein are described and discussed two rare cases of adult patients with SBO secondary to congenital adhesion bands. Our cases emphasize the importance of examining obstructive symptoms and the challenges in the differential diagnosis, particularly in adults without previous surgical or medical history.

Case Report n. 1

A 60-year-old male was admitted to our hospital with complaints of severe abdominal pain associated with nausea and vomiting. Specifically, the pain was mainly located in the epigastrium for the past 8 hours, whereas obstipation was reported for the last three days. Meanwhile, the patient had no history of previous abdominal surgeries or trauma. Physical examination revealed abdominal distention and tenderness in the epigastrium, and the bowel sounds were high-pitched. The digital rectal examination showed an empty rectum with no other evidence of palpable masses.

His vitals at admission were blood pressure: 155/75 mmHg, pulse rate: 90/min, temperature: 37.4° C, respiratory rate: 16/min, SpO_2: 98%, and the laboratory test results were unremarkable.

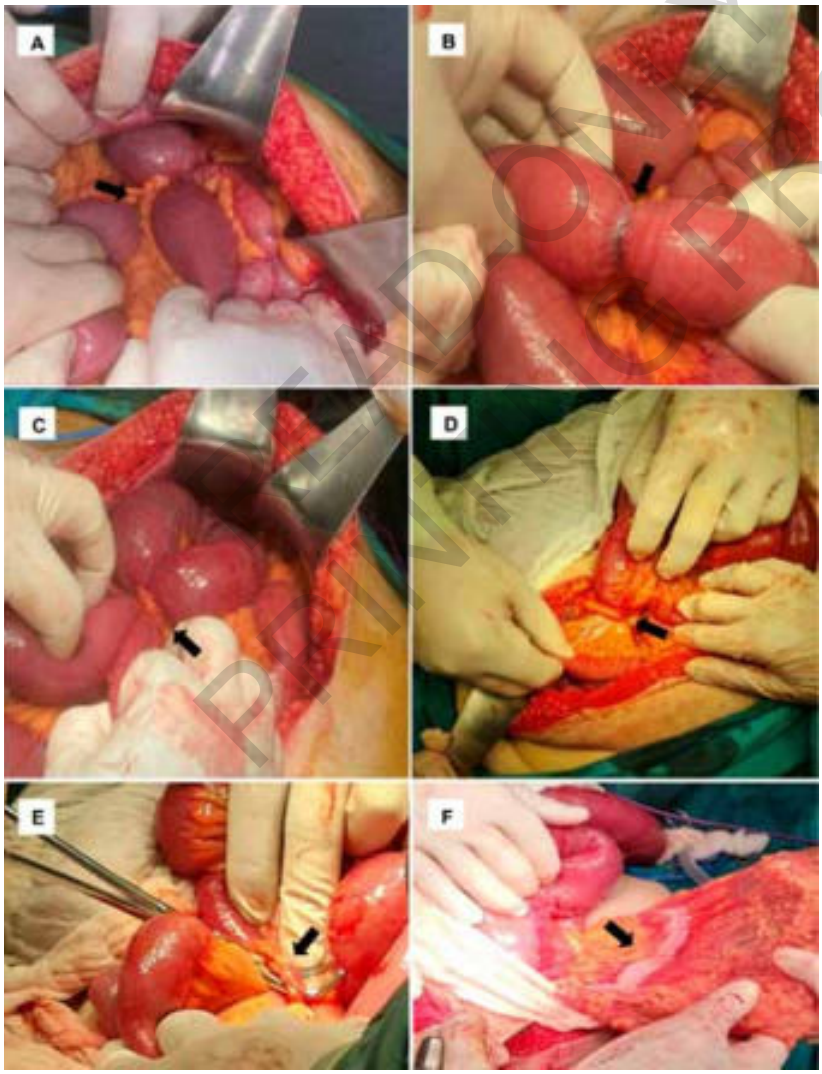

Fig. 1: Intraoperative pictures showing two adult cases of SBO due to congenital adhesion bands. [A] A single band causing SBO at the level of the ileum (black arrow), [B] Bandlike impression on the distended ileum (black arrow), [C] A single adhesive band extending from mesentery to ileum and causing closed loop obstruction (black arrow), [D] [E] A single adhesive band obstructing the small bowel at the level of the ileum (black arrow), [F] Collapsed transverse colon due to SBO at the level of the ileum (black arrow).

First, a plain abdominal X-ray film revealed markedly dilated small bowel loops with multiple air-fluid levels. Then, a contrast-enhanced CT scan of the abdomen was performed, showing distended jejunal loops with a transition point in the left abdomen and the characteristic "whirl sign", indicating the presence of twisted small bowel loops and mesenteric vessels.

The patient was transferred to the operating room for exploratory laparotomy through a midline incision after initial resuscitation with IV fluid, administration of broad-spectrum antibiotics, and nasogastric tube insertion. During the procedure, dilated jejunal and ileal loops were noted, with collapsed distal ileum and colon. Interestingly, two congenital adhesion bands were identified, one at the level of the upper ileum and another one extending from the mesentery to the ileum leading to internal herniation and obstruction of small bowel loops (Fig. 1A-C). There were no signs of intestinal ischemia or peritonitis. Afterwards, the two bands were coagulated and divided. Following an uneventful recovery, the patient was discharged on the fourth postoperative day, without any recurrence of symptoms on the follow-up at three months.

Case Report n. 2

A 58-year-old female was admitted to our department with a two-day history of diffuse abdominal pain, nausea, and vomiting. In addition, the patient, which had no previous surgical or medical history, reported obstipation for the last four days. Physical examination revealed a distended abdomen with diffuse tenderness and increased bowel sounds. Her vitals at admission were blood pressure: 165/80 mmHg, pulse rate: 96/min, temperature: 37.1° C, respiratory rate: 18/min, SpO_2: 99%, and the laboratory test results were unremarkable. A contrast-enhanced CT scan of the abdomen and pelvis was performed, which showed dilatation of small bowel loops without any obvious transition point.

The following day, the patient was transferred to the operating room for exploratory laparotomy due to worsening abdominal pain.

A congenital adhesion band was identified intraoperatively, occluding the ileum (Fig. 1D-F). At the same time, there were no signs of bowel ischemia or peritonitis. Then, the band was ligated and excised. The patient recovered uneventfully and was discharged on the fourth postoperative day, without any recurrence of symptoms on the follow-up.

Discussion

In our report, we present two adult patients with SBO secondary to congenital adhesion bands. The first patient was transferred to the operating room due to a closed-loop obstruction diagnosis. In contrast, the second patient was surgically treated owing to the worsening symptoms following water-soluble media administration. Both patients did not have a history of previous abdominal surgery.

Small bowel obstruction due to adhesion formation is one of the leading causes of hospital admissions. In such cases, SBO may be caused by a single band or matted adhesions [1]. However, single adhesive bands are more commonly found in patients without any prior surgical history [5,6]. In fact, adhesive SBO due to single bands is more likely to lead to strangulation and bowel ischemia, mostly requiring surgical intervention [5,7]. Furthermore, patients with SBO from single adhesive bands exhibit a lower risk of readmission postoperatively compared to patients with matted adhesions (25% vs 49%) [1], leading to significantly lower recurrence rates [5,8].

Overall, adhesions could be either acquired or congenital. Acquired adhesions arise through aberrant peritoneal healing in response to the initial peritoneal injury. Interestingly, they occur in the majority of patients who undergo abdominal or pelvic surgery [3]. On the other hand, congenital adhesion bands are of embryological origin and represent a rare cause of SBO, particularly in adults [1]. However, they could still lead to severe and life-threatening complications due to the low index of clinical suspicion, challenges in reaching a differential diagnosis, and delayed intervention.

The exact incidence rate of SBO secondary to congenital adhesion bands remains unclear, with the most common sites of congenital adhesions usually found around the ileum, mesentery root, colon, jejunum, liver, and omentum [4]. In fact, SBO occurs as a result of external compression of small bowel loops or the entrapment of the intestine between the band and the mesentery [4]. Patients presenting with adhesive SBO may experience colicky abdominal pain, bloating, nausea, vomiting, and obstipation. At the same time, a physical examination is crucial to detect signs of bowel ischemia or peritonitis. Although laboratory tests (such as white blood cell count, C-reactive protein, lactate dehydrogenase, and L-lactate) may help evaluate the disease severity, they are nonspecific or may even lead to a delayed SBO diagnosis [3]. In addition, abdominal plain radiography findings vary from unremarkable to dilatation of small bowel loops with air-fluid levels or sub-diaphragmatic free air indicating bowel perforation in more complicated SBO cases [3]. However, a multidetector CT scan may confirm the SBO diagnosis by accurately identifying the transition point and the cause of intestinal obstruction. This imaging modality could also help evaluate disease severity and detect specific patterns, such as the "fat notch sign" and "beak sign," commonly observed in adhesive SBO due to single bands [1,9,10].

Water-soluble contrast agents have a potential therapeutic role in SBO management by increasing the peristaltic activity and resolving the obstruction [3]. Furthermore,

they play a key role in predicting the need for surgical intervention.
Indeed, if the contrast does reach the colon on an abdominal X-ray 24 hours following its administration, patients will be more likely to respond to non-operative management (96% sensitivity, 98% specificity) [3,11,12]. However, regarding the rates of successful management or recurrence and the surveillance program, more studies are required to explore the non-operative approach for SBO management in the virgin abdomen.
To date, surgical treatment remains the preferred option for the definitive treatment of SBO due to congenital adhesion bands [3]. In fact, laparoscopic surgery is gaining more ground as a safe, feasible, and effective surgical approach for SBO diagnosis and management, particularly in cases with single bands and mild abdominal distention [4]. Nevertheless, conversion to laparotomy should not be regarded as a failure but a result of wise surgical judgment.

Conclusion

Even though SBO secondary to congenital adhesions is rare, particularly in adults, clinicians should be aware of this uncommon emergency and its potentially life-threatening complications. Therefore, a high index of suspicion should be maintained in patients without a history of previous abdominal surgery. Prompt diagnosis and treatment are essential to accomplish the best survival probability.

Riassunto

L'ostruzione aderenziale dell'intestino tenue (SBO) rappresenta un'emergenza chirurgica comune che comporta ricoveri ospedalieri in aumento La maggior parte dei pazienti che presentano SBO aderenziale ha nella storia un precedente intervento chirurgico addominale. Sebbene l'ostruzione intestinale secondaria a briglie aderenziali congenite sia rara, non dovrebbe essere esclusa nemmeno nei pazienti con "addome vergine".
Case Report: Presentiamo due rari casi di pazienti adulti con SBO dovuta ad aderenze congenite. Il primo paziente è stato trasferito in sala operatoria, in seguito a una diagnosi di ostruzione ad ansa chiusa. Due briglie aderenziali congenite sono state riconosciute all'intervento, e quindi coagulate e sezionate.
Il secondo paziente è stato sottoposto a laparotomia esplorativa per un peggioramento del dolore addominale. All'esplorazione chirurgica è stata identificata una briglia adesiva che occludeva l'ileo, che è stata legata e asportata.
Entrambi i pazienti si sono ripresi senza problemi, senza alcuna recidiva dei sintomi al follow-up.
Discussione: Nei con un "addome vergine" si trovano più comunemente singole briglie aderenziali. Queste di solito comportano per lo più uno strangolamento intestinale e a fenomeni ischemici, che richiedono un trattamento chirurgico.
È interessante notare che una tomografia computerizzata può confermare la diagnosi di ostruzione intestinale, mentre i mezzi di contrasto idrosolubili possono aiutare a prevedere la necessità di un trattamento chirurgico. Oltre alla laparotomia esplorativa, la chirurgia laparoscopica sta guadagnando terreno come efficace approccio diagnostico e gestionale dell'SBO.
Conclusione: SBO adesivo per briglie aderenziali congenite è una condizione rara, in particolare negli adulti, con complicazioni potenzialmente pericolose per la vita. Al fine di conseguire diagnosi e trattamento tempestivi, dovrebbe essere considerato un alto indice di sospetto, nella consapevolezza di tale evenienza. anche nei pazienti senza precedenti medici o chirurgici a livello addominale.

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