A Case Study on Rare Occurance of Geriatric Intussusception with Lipoma as The Leading Point

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ABSTRACT

Intussusception is commonly found in the early years of infancy but is considered rare in adult patients. There are no specific symptoms for intussusception in adults, as it is typically seen in infants; hence, radiology imaging is a major key to determining the diagnosis. We presented a case where a 77-year-old male patient presented with persistent abdominal pain, distension, and bloody stool 4 days before an emergency department (ED) visit. The patient was referred from another healthcare facility after receiving a normal result of USG. A 3-view abdominal x-ray was performed, which revealed ileus with large bowel obstruction. The abdominal CT-scan later revealed a sausage-like sign, suggestive of a colo-colic intussusception with a large mass of fat as the leading point and pneumo-peritoneum. Abdominal CT-Scan showed the detailed imaging of how and where the intussusception is occurring and what seems to be the root problem. The laparotomy surgery report also confirmed the colo-colic intussusception with lipoma as the primary cause. Hence, radiology plays a crucial role in diagnosing the tumor leading to intussusception in the preoperative setting. Among the imaging techniques, abdominal CT scan has emerged as the preferred method due to its high sensitivity and ability to provide detailed information, which is essential for therapeutic management. This case report aimed to highlight the importance of radiological imaging, particularly abdominal CT scan, in diagnosing adult intussusception with a neoplastic leading point, and to present a rare case of colo-colic intussusception caused by a lipoma in an elderly patient.

Keywords: *Colon, CT-Scan, Geriatric**,** Intussusception, Lipoma*

ABSTRAK

Intususepsi lazim ditemukan pada bayi dan jarang ditemui pada pasien dewasa. Tidak ada gejala khusus untuk intususepsi pada orang dewasa seperti pada bayi, oleh karena itu pencitraan radiologi berperan penting untuk menentukan diagnosis. Kami mempresentasikan kasus dimana seorang pasien laki-laki berusia 77 tahun datang dengan nyeri perut terus-menerus, distensi, dan feses berdarah 4 hari sebelum kunjungan ke unit gawat darurat (UGD). Pasien dirujuk dari fasilitas kesehatan lain setelah menerima hasil USG yang normal. Dilakukan rontgen abdomen 3 posisi, yang menunjukkan ileus dengan obstruksi usus besar. CT-scan abdomen kemudian menunjukkan adanya sausage-like sign, yang menunjukkan intususepsi colo-colic dengan massa lemak besar sebagai titik awal dan pneumo-peritoneum. CT-Scan abdomen menunjukkan gambaran terperinci tentang bagaimana dan di mana intususepsi terjadi dan apa yang tampaknya menjadi akar permasalahannya. Laporan operasi laparotomi juga mengonfirmasi intususepsi kolokolik dengan lipoma sebagai penyebab

utamanya. Radiologi memainkan peran penting dalam mendiagnosis tumor yang mengarah pada intususepsi dalam pengaturan praoperasi. Di antara teknik pencitraan, CT scan abdomen telah muncul sebagai metode yang lebih disukai karena sensitivitasnya yang tinggi dan kemampuannya untuk memberikan informasi terperinci yang penting untuk manajemen terapeutik. Laporan kasus ini bertujuan untuk menyoroti pentingnya pencitraan radiologis, khususnya CT-scan abdomen, dalam menegakkan diagnosis intususepsi pada pasien dewasa dengan penyebab berupa neoplasma, serta menyajikan kasus langka intususepsi kolokolik yang disebabkan oleh lipoma pada pasien usia lanjut.

Kata kunci: *Kolon, CT-Scan, Geriatri, Intususepsi, Lipoma*

INTRODUCTION

In 1674, Dutch physician Paul Barbette first described intussusception, a medical condition in which a segment of the gastrointestinal tract telescopes into the lumen of an adjacent segment [1]. Approximately 20:1 cases of intussusception occur more in children than in adults [2]. Adult cases of intussusception are exceedingly rare and differ clinically, pathologically, and therapeutically from the pediatric form [3,4]. Only 5% of all intussusception cases occur in adults, and it accounts for less than 5% of bowel obstruction [2]. According to Manouras, this condition occurs in only 2-3 people in 1,000,000 population and 1 in 1,300 abdominal procedures [5,6].

Unlike in children, abnormal lead points cause roughly 90% of adult intussusception. Masses or neoplasms, either malignant or benign, account for 70% and 30% of these lead points, respectively [4]. Most adult cases are small-bowel intussusception (52%), while large-bowel cases are 38%. The remaining 10% involve gastrointestinal and surgical stomas, equally common in men and women [7]. A lack of peristalsis in the colon makes it unusual. Most colon masses are caused by colorectal adenocarcinoma, while lipoma and angiolipoma are less often mentioned [8]. Hyperplastic polyps, adenomatous polyps, and lipomas are the most prevalent, with lipomas placing third, from 0.2% to 4.4%. In 17% of cases, lipomas lead to intestinal intussusception [9]

Intussusception in adults can cause widespread stomach discomfort, nausea, vomiting, gastrointestinal bleeding, changes in faeces, and abdominal distention. These symptoms might be categorized as acute, subacute, or chronic. Certain individuals exhibited asymptomatic conditions and were incidentally diagnosed. Diagnosing adult intussusception alone by clinical examination is challenging due to the vague nature of its symptoms. Distention or diffuse stomach discomfort may not always be present. These symptoms may also suggest the presence of inflammatory bowel diseases, bowel obstruction caused by peritoneal adhesions, or infectious gastroenteritis. Imaging procedures like CT scans frequently provide diagnostic clarity [10]. This paper presents an unusual case of large bowel intussusception in adult patient, which was found to have a colonic fat tumor as its leading point, detected through an abdominal computed tomography.

CASE ILLUSTRATION

A 77-year-old male patient with no medical or surgical history was referred from another healthcare facility to our emergency department with abdominal pain that began four days prior. The patient reported abdominal distension, melena, and restricted flatus passage, as well as a VAS pain level of 3-4. Several days before admission, the patient had a normal ultrasound. No fever, bilious vomiting, jaundice, or urinary issues were reported. His family history was free of tumors and intestinal obstruction.

The patient had stable vital signs upon arrival, including 148/108mmHg blood pressure, 97 bpm heart rate, 20 bpm respiratory rate, and 36.3^{o}C temperature. The physical examination revealed a distended abdomen with weak peristalsis at 7 times per minute. Mass or tenderness was absent. The patient had normal lung and heart sounds and no conjunctival anaemia or jaundice. Laboratory results were within the normal limits.

Upon admission to the hospital, the patient underwent a three-position abdominal x-ray **(Figure 1)**. Two days later, a more precise diagnosis was achieved by an abdominal CT scan with intravenous contrast. The CT imaging revealed that a long segment of the descending colon had telescoped into the sigmoid colon due to a 51mm lipomatous lead point **(Figure 2-4)**. An obstruction in the adjacent colon and pneumoperitoneum occurred because of the intussusception **(Figure 5)**.

The patient subsequently underwent a laparotomy to correct the intussusception. Unfortunately, no pathological examination was conducted on the patient. The patient was discharged later without any complications.

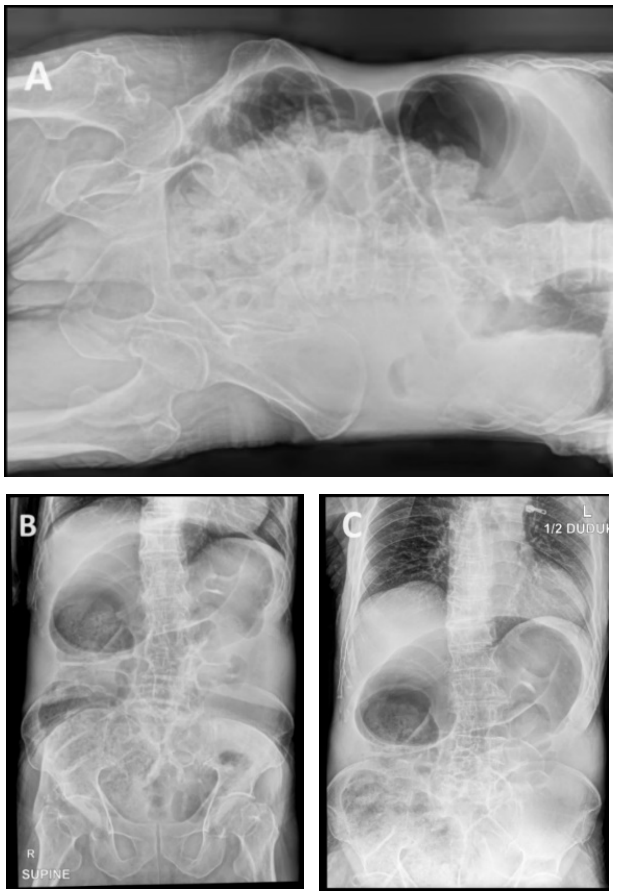

Figure 1 – A 3-position abdominal x-ray shows colon and partial small bowel dilatation, indicating large bowel obstruction. The largest measured colon diameter is 10.94cm

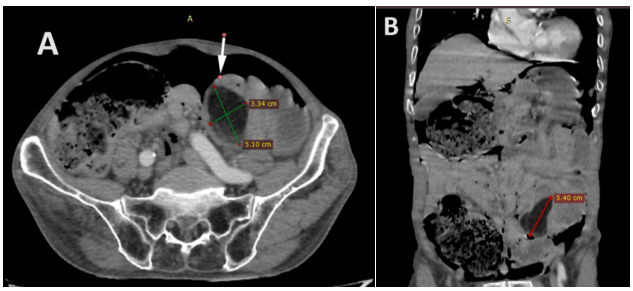

Figure 2 (A) Axial contrast-enhanced CT and (B) coronal view, white arrow points to a rounded endoluminal structure with maximum axial size of 54x33 mm, displaying an image of fat density of -101 Hounsfield Units (HU), suggestive of a lipoma.

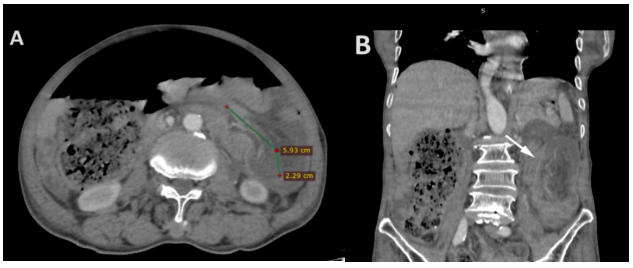

Figure 3 Axial cut (A) showed descending colon telescoping into sigmoid colon, with 5.93 mm (the intussusceptum) and 2.29mm (the intussuscipiens) length. Coronal cut (B) showed bowel-within-bowel appearance (white arrow).

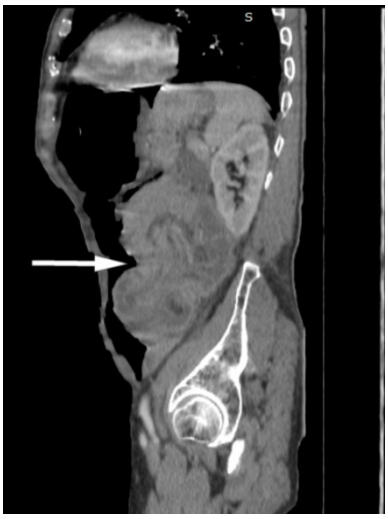

Figure 4 Sagittal cut displaying the sausage-shaped sign

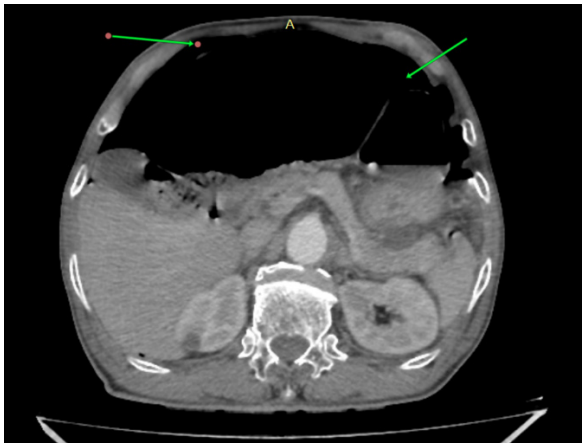

Figure 5 The green arrow shows a pneumoperitoneum

DISCUSSION

Intussusception is a medical and surgical emergency characterized by the telescoping of one segment of bowel (intussusceptum) into an adjacent distal bowel (intussuscipiens), causing a transient or permanent intestinal obstruction.[2]

The obstruction can reduce blood flow to the afflicted colon, leading to intestinal ischemia. More severe complications, such as necrosis and perforation, can result from intestinal ischemia. Intussusception is the most frequent cause of intestinal obstruction in children aged three months to three years, but relatively rare in adults, accounting for only 1-5% of bowel obstructions with a mean age of onset of 50 years [11–13]. The most common types are:

1. Ileocolic intussusception affects the ileum and the caecum. This type accounts for 60-70% of all cases.
2. Enteric intussusception affects the small intestine, accounting for 20-30% of all cases.
3. Colocolic intussusception affects the colon and accounts for 5-10% of all cases. [14]

Adult intussusception is rare and typically caused by a lead point. Intussusception can be transient and asymptomatic if the lead point is absent. However, if a lead point is present, intussusception may persist and cause bowel obstruction, warranting surgery. CT scans can accidentally reveal asymptomatic intussusception. Neoplasms, polyps, surgical adhesions, and Meckel's diverticulum are common sources of lead point in adult intussusception [15].

The clinical triad of intussusception in children is colicky stomach pain, currant jelly stool, and a sausage-shaped painful abdominal mass. Conversely, adult intussusception usually causes bowel obstruction symptoms such as non-specific stomach discomfort, nausea, vomiting, constipation, and haematochezia. The classic triad is rare in adult intussusception [16]. Acute circumstances last shorter than 4 days, while subacute (4-14 days) and chronic (more than 14 days) symptoms can occur, notably in colonic intussusception [17].

Lipomas are benign adipose tissue neoplasms that typically occur in adipose tissue. These soft, painless nodules might form on the trunk, neck, or forearms, but can also arise in uncommon regions such as the gastrointestinal tract. Intestinal lipomas can induce bleeding, obstruction, or intussusception if they exceed 2 cm. Intestinal lipomas are rare, with the incidence ranging from 0.15-4.4%, making them the unusual cause of adult intussusception [9]. The intestinal lipoma can be intramuscular, subserosal, or submuscosal [3]. Adult intussusception is most often caused by subserosal and submucosal lipomas. Symptoms are present in only 25% of cases of intestinal lipomas, typically occurring in colo-colic intussusception. Lipomas are most frequently located in the transverse colon (28%), sigmoid colon (20%), caecum (19%), ascending colon (15%), descending colon (14%), and rectum (4%), being less common locations. [18]

Due to the rare prevalence and nonspecific clinical manifestation of adult intussusception, perioperative diagnosis is still a challenge; thus, imaging modalities played a significant role in aiding the correct diagnosis and management. Plain radiography is the preferred initial diagnostic modality for locating the obstruction and detecting complications like pneumo-peritoneum. Intussusception-specific findings like the "crescent sign" are rare in clinical practice. However, upper gastrointestinal contrast series and barium enema may be beneficial. The first may have a "stacked coin" or "coiled-spring" appearance, while the latter is used in patients with colo-colic or ileo-colic intussusception, which may have "cup-shaped" filling defects or "spiral" or "coil-spring" appearances. Due to barium peritonitis, patients with suspected intestinal perforation or ischemia should not get a barium enema [4,19].

In resource-limited settings, abdominal ultrasonography (USG) is a valuable tool to diagnose intussusception because of its cost-effectiveness, rapidity, and real-time results without ionizing radiation. Its sensitivity and specificity in identifying intussusception are nearly 100% for experienced operators, but are reduced in adult cases, probably due to abdominal distension or obesity. Intussusception classical signs, such as the "target or doughnut" sign in transverse view and "pseudo-kidney or hayfork" sign in longitudinal view, are best seen with USG [16,19,20].

Since multi slice CT (computed tomography) scans were introduced, CT scanning technology has advanced. CT scans detect intussusception more accurately in adults, with a sensitivity of 58-100% and specificity of 57-71%. Transient and asymptomatic intussusceptions without a lead point are now more often recognized [21]. Intussusception has three radiological patterns based on the progression of the diseases, such as target-like, reniform, and sausage-form patterns. Initially, axial slices of the intussusception show an alternating concentric arrangement of the layers of the wall of the involved loops, creating the "target-like" or "bull's-eye sign." The reniform pattern or "pseudo-kidney" appears as a bilobed mass with central low attenuation and periphery higher density, considered to develop from ischemia thickening of the intussusceptum's bowel wall. The sausage-shaped pattern may be caused by alternating low and high attenuation in the intestinal wall, mesenteric fat and fluid, intraluminal fluid, contrast material, or air [19,22].

CT scans can provide information regarding the mass's position, its nature, and its relationship with surrounding tissue. Patients with suspected malignancy causing intussusception may be staged. Moreover, a recent report reveals that CT scans can detect complications like ischemia and perforated hollow, which require urgent surgery and adjustment of therapeutic management [19]. CT scans can distinguish intussusception with and without a lead point, but they cannot always distinguish between pathological lesions and thickened oedematous intestinal walls except in cases of lipoma. Differentiating lead masses from inflammation is challenging due to the poor recognizability of the oedematous intestinal wall and the lead mass. Histopathology confirmation is necessary for distinguishing malignant from benign neoplasms [22].

A colonic lipoma appears as a low attenuation and avascular hypodense fat density mass on an abdominal computed tomography (CT) scan with contrast. It has a uniform appearance, smooth border, and a fat component of -80 to 120 Hounsfield Units, which facilitates its differentiation from other diseases [23,24]. However, CT may not be a reliable diagnostic method for small colonic lipomas. MRI (magnetic resonance imaging) can detect lipomas with adipose-specific signal intensity on T1, but it is less accessible and requires patient participation. MRI can replace CT in non-urgent scenarios due to its equal sensitivity and outcomes [19,25].

Lower gastrointestinal tract endoscopy can help diagnose and localize ileocecal and colo-colic intussusception lesions. Colonoscopy is also extremely beneficial for distinguishing benign from malignant colonic illness. The naked eye can detect a lipoma during colonoscopy, with certain endoscopic features as characteristic signs, such as the "cushion" and "naked fat" signsIn cases of acute presentation with clinical obstruction, lower endoscopy must be carefully considered to ensure that the advantages outweigh the hazards, such as perforation in a malignant tumor [17]. Early intervention reduces the risk of intussusception recurrence, and patients usually recover well, according to Waack [15].

In our case report, the ultrasound performed several days prior was unable to detect the abnormalities that led to the patient's complaint. Therefore, an abdominal CT scan serves as the gold standard in diagnosing adult intussusception. It is critical to perform a histopathology examination to confirm that the mass is indeed a lipoma.

CONCLUSION

Intussusception in the adult population is rare and different from the paediatric form in many aspects. Preoperative diagnosis is usually missed or delayed because of nonspecific and often subacute symptoms, thus posing a radiological challenge. CT is the technique of choice, as it allows for identification, localization, and characterization of the structural cause, which is essential data in the therapeutic management of the patient with intussusception.

Conflict of Interest

The authors declare that there are no competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Author Contribution

JG contributed to the study conception, data collection, radiological examination, and interpretation.

RR was responsible for data recording, obtaining permissions, and drafting the manuscript.

DN contributed to manuscript writing and literature review.

RP provided surgical expertise and contributed to the clinical interpretation of the findings.

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Data Availability

Data supporting the findings of this case report are derived from the patient's medical records and are not publicly available due to privacy and institutional regulations.

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