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Olgu Sunumu / Case Report

Ileocecal Intussusception in a Cat: Case Report

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Abstract: This report details the case of a 4-year-old British shorthair cat presented with a seven-day history of bloody diarrhea, lethargy, and anorexia. Clinical examination revealed abdominal pain, hyperemic mucous membranes, and dehydration. Laboratory findings included significant leukocytosis and the presence of Giardia cysts. Abdominal ultrasonography was pivotal, identifying the pathognomonic "bull's-eye" sign at the ileocecal junction, leading to a diagnosis of intussusception. An exploratory laparotomy confirmed an approximately 15 cm ileocecal intussusception, which was treated via surgical resection and end-to-end anastomosis. Despite initial intervention, the patient developed fatal complications including intestinal perforation and generalized peritonitis, leading to death after a second surgery.
This case underscores the importance of abdominal ultrasonography for the rapid diagnosis of intussusception and highlights the potential for severe, life-threatening complications even after apparently successful surgical correction. It serves as a critical reminder of the need for vigilant postoperative monitoring for signs of generalized intestinal ischemia and perforation.

Keywords: Cat, İntussusception, Ultrasonography, Surgical Treatment

Bir Kedide İleosekal İnvaginasyon: Olgu Sunumu

Özet: Bu olgu sunumu, yedi günlük hematokezi, anoreksi ve letarji öyküsüyle getirilen dört yaşında bir British shorthair ırkı kedi hastayı rapor etmektedir. Klinik muayenede karın hassasiyeti, hiperemik mukoz membranlar ve dehidratasyon bulguları saptanmıştır. Hematolojik incelemede belirgin lökositoz tespit edilmiş ve fekal yaymada Giardia kisti doğrulanmıştır Abdominal ultrasonografi, ileoçekal bileşkede patognomonik olan “bull’s-eye” bulgusunu ortaya koyarak invajinasyon tanısının konulmasında kritik bir rol oynamıştır. Bu bulgu, eksploratif laparotomi ile doğrulanmış ve yaklaşık 15 cm'lik bir ileoçekal intüssusepsiyon saptanmış; bu segmentin cerrahi rezeksiyonu ve uç-uca anastomozu ile tedavi edilmiştir. Teknik olarak başarılı olan ilk müdahaleye rağmen, postoperatif süreç, intestinal perforasyon ve takiben gelişen generalize septik peritonit gibi fatal sekellerle komplike olmuş ve ikinci bir cerrahi girişimi takiben hasta kaybedilmiştir.
Bu olgu, invajinasyonun hızlı tanısında abdominal ultrasonografinin önemini vurgulamakta ve görünürde başarılı bir cerrahi düzeltmenin ardından dahi ağır ve yaşamı tehdit edici komplikasyonların ortaya çıkabileceğini göstermektedir. Ayrıca, yaygın intestinal iskemi ve perforasyon belirtilerinin erken saptanabilmesi amacıyla ameliyat sonrası dönemde dikkatli ve sürekli klinik izlemin gerekliliğini kritik bir hatırlatma olarak ortaya koymaktadır.

Anahtar Kelimeler: Kedi, İnvajinasyon , Ultrasonografi, Cerrahi Tedavi

1. **Introduction**

Intussusception is a serious condition in which a segment of the intestine telescopes into an adjacent segment, leading to intestinal obstruction and potentially life-threatening complications. Although it can occur in cats, it is considered an uncommon gastrointestinal disorder in this species (1). Although it's more common in young cats, it can happen at any age. The cause is often an underlying issue such as abnormal gut movements, inflammation, or cancer (2,3). Clinical manifestations such as vomiting, anorexia, and palpable abdominal masses are nonspecific and align with other types of intestinal obstruction, making rapid diagnosis exhausting (4).

Ultrasonography has emerged as the primary diagnostic tool, with a more than 90% sensitivity for identifying characteristic "target" lesions (5). However, delayed intervention increases the possibility of irreversible intestinal ischemia, perforation, and sepsis, requiring early surgical exploration (6). Treatment usually consists of manual reduction or resection-anastomosis, while there is ongoing discussion over the best technique for reducing recurrence and postoperative complications (7). Recurrence rates of 10-20% have been recorded in cats treated with manual reduction, indicating the significance of a complete intraoperative evaluation for underlying causes (8).

This case report discusses the clinical presentation, diagnostic imaging findings, surgical treatment, and prognosis of a 4-

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year-old domestic shorthair cat suffering from ileocecal intussusception. The case study highlights the importance of ultrasonography in leading immediate action and contributes to the current discussion on surgical decisions in non-necrotic intussusceptions.

2. Case History

A 4-year-old British Shorthair cat was presented to the veterinary hospital with a seven-day history of bloody diarrhea, lethargy, and anorexia. The owner noted no previous accidental ingestion of foreign body. The cat had previously been healthy and had received the necessary vaccinations and deworming medication.

The clinical signs were mild to severe abdominal pain. The vital signs included a rectal temperature of 38.9°C, a respiratory rate of 30 breaths per minute, and a heart rate of 120 beats per minute (bpm). A physical examination showed hyperemic mucous membranes, moderate dehydration, and peripherally non-enlarged lymph nodes. Complete blood count (CBC) test showed leukocytosis (31.3 × 10⁹/L), neutrophilia (26.8 × 10⁹/L), and eosinophilia (6.2×103/mcL). Giardia cysts were observed during a direct fecal smear examination. We did not analyze blood gas due to the cat owner's financial situation. (Table 1)

Table 1. Abnormal parameters of CBC and biochemistry results

Parameters	Values	Reference Range (20)
Leukocytes (10⁹/L)	31.3	5.5-19.5
Neutrophil (10⁹/L)	26.8	2.1-15
Eosinophil (%)	6.3	0-4
BUN (mg/dl)	140.0	17.6-32.8
Creatinin (mg/dl)	6.55	0.80-1.80
Na (mEq/l)	145	147-156
K (mEq/l)	5.1	3.4-4.6
Cl (mEq/l)	105	107-120
Total Protein (g/dL)	8.59	5.7-8.7
Albumin (g/dL)	2.96	3.5-5.3

The case study highlights the importance of ultrasonography in leading immediate action and contributes to the current discussion on surgical decisions in non-necrotic intussusceptions.

The ultrasound was performed using a Mindray DC-N3 machine with a 6C2 6.5 MHz (Microconvex Probe). Ultrasonographic assessment of the abdomen revealed the characteristic "bull's eye" appearance indicative of intussusception at the ileocecal junction, as well as enlargement of the adjacent lymph nodes. Notably, no peritoneal effusion was present at the time of the initial diagnosis.

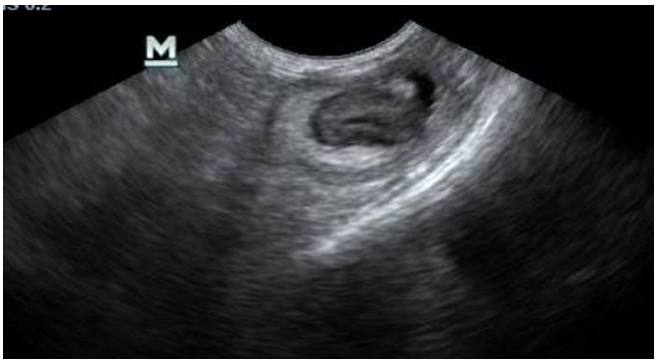

Figure 1. It demonstrated the characteristic “target” or “bull’s-eye” appearance, which is considered a distinctive sonographic feature of intussusception.

3. Anesthesia Protocol

Anesthesia was induced with an intramuscular injection of Tmidin® (Detomidin) at a dose of 0.1 mg/kg, followed 10 minutes later by an intramuscular injection of 1 mg/kg Ketasol® %10 (ketamine HCl). Anesthesia was maintained via inhalation of sevoflurane at a concentration of 4%. The patient was continuously monitored with real-time heart rate, respiration, oxygenation, and body temperature assessment (21).

4. General Surgical Preparation

The patient was positioned in ventral recumbency, and the ventral abdominal region was shaved and aseptically prepared from the xiphoid cartilage to the pubis. The surgical field was isolated with sterile drapes. A median laparotomy was performed between the umbilical region and the pubis. Following the skin and abdominal muscles incision, the abdominal cavity was accessed, and all abdominal organs and intestinal segments were examined via palpation to identify the intussuscepted portion.

An approximately 15 cm segment of the mid-ileum was found to be intussuscepted (Figure 5), exhibiting partial discoloration. The selection of this segment was decided.

Figure 5. The presence of intussuception in ileocaecal junction

The affected portion was exteriorized completely (Figure 6), and sterile drapes were used to isolate the area and prevent potential contamination.

Figure 6. The extraction of intussuception in ileocaecal junction.

The mesenteric vessels supplying the intussuscepted intestinal segment were first ligated. Intestinal clamps were then applied to the cranial and caudal segments of the affected bowel to prevent spillage of intestinal contents. The intussuscepted portion was excised and removed. An end-to-end intestinal anastomosis was performed using a simple continuous suture pattern with 3-0 absorbable polyglactin-910 (Vicryl).

Finally, the abdominal muscles and skin were routinely closed continuously—absorbable sutures.

5. Postoperative Care

The patient was administered intravenous lactated Ringer's solution for five days, along with parenteral POLGYL % 0.5 (Metronidazol)IV and EQİZOLİN® (Cefazolin) 1 g IV. Starting from the second postoperative day, liquid feeding was recommended.

Five days after surgery, the cat was referred back to the surgical clinic due to a cessation of food and water intake and a decline in overall health status.

Seventy-two hours post-surgery, a follow-up ultrasonographic examination was conducted. Ultrasound findings revealed peritonitis, pancreatitis (Figure 2),

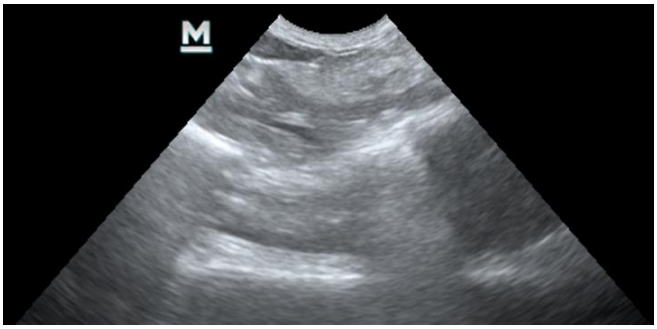

Figure 2. An increase in peripancreatic fat echogenicity (a) and pancreas paranchyma (b) due to pancreatitis.

Enlargement of mesenteric lymph nodes, and abdominal effusion (Figure 3) caused by intestinal perforation.

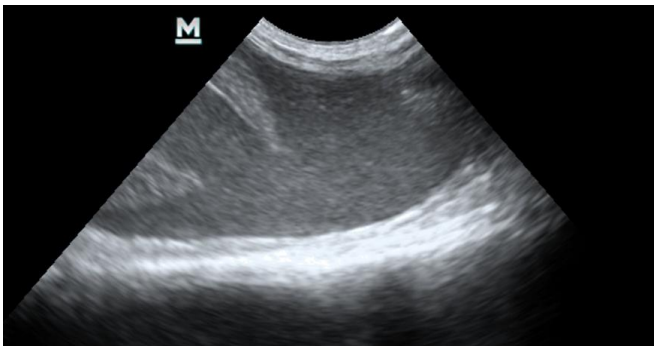

Figure 3. Severe abdominal effusion after surgery.

The enhanced peritoneal stripe sign (EPSS) (Figure 4) indicated the presence of pneumoperitoneum, which also increased suspicion of intestinal perforation.

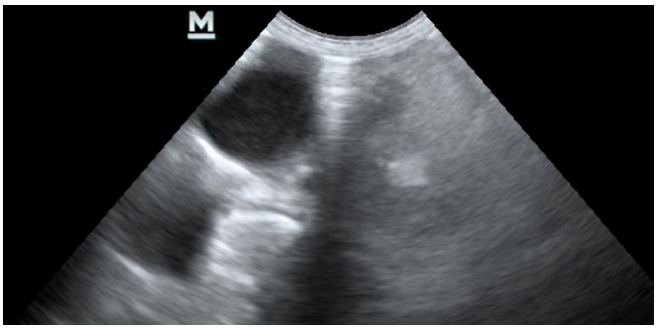

Figure 4. Presence of enhanced peritoneal stripe sign (EPSS) due to pneumopertionum.

Ultrasonographic examination and abdominal fluid aspiration revealed the presence of exudate and partial intestinal content in the abdominal cavity, prompting the decision for a second surgical intervention.

A median laparotomy was performed following standard procedures. No defects or leakage were detected at the previous anastomosis site. However, localized discoloration and perforation were observed in multiple segments of the small intestine. These intestinal lesions were determined to be secondary to pre-existing ischemia and necrosis caused by the initial intussusception. Due to the progression of generalized

ischemia and necrosis, the patient died within 24 hours of the second surgical intervention.

Ethical Statement: Informed consent was obtained for the use of the patient data included in this study.

Discussion

Ileocecal intussusception represents a relatively rare yet clinically consequential condition in feline patients, defined by invading the ileal segment into the cecum or proximal colon (ileocolic intussusception). While the precise etiology frequently remains idiopathic, postulated predisposing factors encompass gastrointestinal dysmotility, inflammatory bowel disease (IBD), parasitic infestations, and neoplastic processes (9, 4). The underlying etiology in the present case was consistent with a primary intestinal hypermotility disorder. This disorder was most likely secondary to enterocolitis precipitated by giardiasis, a conclusion supported by the clinical sign of concurrent hemorrhagic diarrhea (10). Post-inflammatory changes secondary to enteritis or prior abdominal surgery (e.g., enterotomy) are also implicated in triggering abnormal peristalsis (11). For instance, Applewhite et al. (2001) reported that 15% of cats undergoing enterotomy later developed intussusception, likely due to localized inflammation altering intestinal motility (6).

Ultrasonography remains the gold standard for diagnosing intussusception due to its high sensitivity in identifying pathognomonic "target" or "bull's-eye" lesions (12). The concentric hyperechoic and hypoechoic rings seen in this case (Figure 1) correspond to the layered walls of the invaginated intestine and mesenteric fat, a finding consistent with previous studies (13). While less specific, radiography may reveal secondary signs of obstruction, such as dilated intestinal loops, but lacks the diagnostic precision of ultrasound (14). Another study emphasized that ultrasound not only confirms the diagnosis but also aids in assessing intestinal viability and ruling out complications like perforation (15).

Surgical intervention is critical to prevent progression to necrosis, sepsis, or peritonitis. As performed here, manual intussusception reduction is preferred in acute cases with viable tissue (16). However, debate exists regarding the risk of recurrence after manual reduction versus resection-anastomosis. Levitt and Bauer reported a 20% recurrence rate in cats treated with manual reduction alone, advocating for resection in cases of questionable viability or chronicity (3). Conversely, resection-anastomosis, while eliminating recurrence risk, carries higher morbidity due to anastomotic complications (7). In this patient, the absence of necrosis and rapid postoperative recovery supported the decision to preserve the intestinal segment.

Postoperative management should focus on the prevention and early detection of potential complications, including paralytic ileus, anastomotic dehiscence, and sepsis. The administration of broad-spectrum antibiotics, such as amoxicillin-clavulanate, is recommended to reduce the risk of bacterial translocation secondary to intestinal compromise (17). The present study used metronidazole and cefazolin as a prophylactic therapy to prevent secondary infections and peritonitis. The favorable outcome in this case aligns with studies showing that 80–90% of cats recover fully with timely intervention (2). However, long-term monitoring is essential to detect recurrence or occult underlying disease. Boag and Hughes noted that 12% of cats with idiopathic intussusception developed recurrent gastrointestinal signs within six months, underscoring the need for follow-up imaging or biopsy (10).

Finally, histopathology of resected tissue is recommended even in grossly normal segments, as occult neoplasia or IBD may be present (18). Lymphoma in feline intussusception cases can occur with no macroscopic lesions, emphasizing the importance of biopsy in guiding long-term management (19).

Despite successful initial diagnosis via characteristic ultrasonographic "bull's-eye" sign and subsequent surgical resection and anastomosis, this case of feline ileocecal intussusception had a fatal outcome due to generalized intestinal ischemia and perforation that became apparent after the first surgery, underscoring the clinical importance of maintaining a high index of suspicion for this condition, utilizing ultrasound for rapid diagnosis and postoperative monitoring, and understanding that intraoperative assessment of intestinal viability can be challenging, often warranting a cautious prognosis and aggressive surgical approach even in seemingly non-necrotic cases.

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