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Surgical management of intussusception as a sequelae of canine parvoviral enteritis in a golden retriever puppy

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Abstract
A 2 month old female golden retriever puppy was presented to Department of Veterinary Surgery and Radiology, Bengaluru, KVAFSU with a history of inappetence, bloody mucoid diarrhoea and vomiting. It was diagnosed with parvoviral gastroenteritis and treated for since 7 days with no improvement. Abdominal palpation, ultrasonographic examination and contrast radiography revealed an intussusception. On exploratory laparotomy a jejuno-jejunal intussusception was found which was corrected surgically by exploratory laporotomy, the puppy recovered uneventfully.

Keywords: Intussusception, dog, parvovirus

Introduction
Intussusception is the telescoping or invagination of one intestinal segment (intussusceptum) into the lumen of an adjacent segment (intussuscipiens). GI tract intussusceptions may occur anywhere; however, ileocolic and jejunojejunal intussusceptions are most common (Fossum, *2019*) [4]. Affected animals are often younger than 1 year of age. The condition may be associated with enteritis secondary to parasites, viruses, linear foreign bodies, cecal inversion, or previous abdominal surgery; it has been documented in post- parturient queens immediately or up to 8 weeks after delivery and, in older animals, is often associated with intestinal neoplasia (Lewis *et al*. 1987) [6] Puppies are the most likely ones to develop intussusceptions especially due to Parvo viral enteritis and parasitic enteritis. Enterocolic intussusception, particularly ileocolic intussusceptions are the most common type described (Allenspach. K, 2010) [1]. This report describes the surgical management of jejunojejunal intussusception of a 2 month old golden retriever puppy secondary to parvoviral gastroenteritis.

Case history and observations
A 2 month old female golden retriever puppy weighing 3.8 kg was presented to Department of Veterinary Surgery and Radiology, Veterinary College Hebbal, Bengaluru, KVAFSU, with a complaint of bloody mucoid diarrhea, inappetence, vomiting since 2 days. The puppy was diagnosed with parvoviral gastroenteritis and it was treated for 7 days, the puppy did not show any improvement in condition.
A re-examination was performed and the following observations were made; Abdominal palpation revealed pain on palpation and sausage shaped mass. Following this, an abdominal ultrasonographic examination was performed which revealed concentric layers of the intestine in a characteristic “target like” lesion or “bull’s eye” appearance of the intestine (fig. 1) which was suggestive of intussusception. For confirmatory diagnosis a contrast gastrogram was performed 24 hour after feeding barium sulphate paste orally, The lateral abdominal radiograph revealed, delayed gastric emptying and an intussusception in the caudal abdominal area (fig. 2) An exploratory laparotomy was performed.

Treatment
The animal was pre-anesthestised with xylazine hydrochloride at 1 mg/kg, Atropine sulphate

@ 0.04 mg/kg, induced and maintained with 1.25% Thiopental @ 12.5 mg/kg. The antibiotic given was Ceftriaxone @ 25 mg/kg and analgesic- meloxicam at 0.3 mg/kg the surgical site of the animal was clipped and prepared aseptically. The dog was placed on dorsal recumbency, a midline celiotomy incision was done and the intestines were exteriorised. Upon exploration of the intestinal loops, a jejunojejunal intussusception was noticed (fig. 3). The enteric vessels were patent and the bowel was not ischemic and there was no adhesions noticed in the intussusception hence manual reduction was done.The intussusception was manually reduced by applying gentle pressure on the intussusceptum and milking it out of the intussuscepiens then the reduced intestinal loops were checked for viability. A small part of devitalized tissue was noticed which was resected and intestinal anastomosis was performed using PDS 2-0 in simple continuous appositional pattern. Following this omentalisation was done and the abdominal muscles, subcutaneous tissue and skin were sutured routinely.

Post operatively the animal was kept on fluid therapy for 2 days, metronidazole, ceftriaxone, meloxicam for 5 days. Soft food was started 48 hours post the surgery. 15 days post operatively, the animal has recovered uneventfully

Fig 1: Ultrasonographic examination of the puppy with intussusception

Fig 2: Contrast Gastrography

Fig 3: Jejunojejunal intussusception

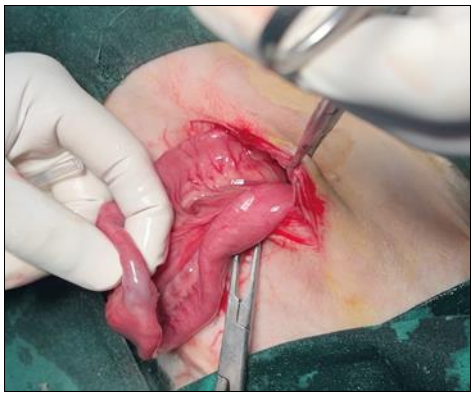

Fig 4: The devitalized part of the intestine (white arrow mark)

Discussion

This report described the successful manual reduction of intussusception, the puppy recovered uneventfully after intensive post-operative fluid therapy and antibiotic therapy. Manual reduction is successful only if fibrin has not formed firm serosal adhesions. (fossum, loc cit.).

Ultrasound guided hydrostatic reduction of an intussusception in a golden retriever puppy has been done successfully for a reducible intussusception. It consists of filling the colon with saline using gravity-controlled hydrostatic pressure. This technique does not require specialized training and provides veterinarians with an alternative less expensive and less invasive option compared to conventional surgery. (Nuemann *G et al* 2022) [7].

Parvoviral antigen was seen in 34% of the dogs with intussusception in a study, and other undetermined viral or bacterial agents, inflammation, hypermotility and metabolic derangements were the cause of enteritis or gastroenteritis in the remaining dogs. (Rallis T.L, *et al*, 2000) [9]. Acute enteritis or gastroenteritis predisposes to intussusception by inducing alterations in the intestinal motility. Intestinal hyper- or hypomotility is a feature of parvoviral enteritis (Dow, 1996; Guilford and Strombeck, 1996) [2, 5].

GI obstruction, such as intussusception in puppies with parvoviral enteritis, must be excluded before treatment with metoclopramide is initiated. The prokinetic action of metoclopramide is negated by narcotic analgesics and anticholinergic drugs, such as atropine. (Orhita M, *et al* 1994) [8].

The limitation of the case report is that histopathological examination of the intestinal loops was not done, and enter this report highlights that intussusception should be considered as a potential complication in cases presented for chronic enterits.

Conclusion

This report demonstrates the successful surgical treatment of jejunojejunal intussusception in a 2-month-old golden retriever puppy with parvoviral gastroenteritis. Despite initial treatment for parvovirus, the puppy showed no improvement, leading to the diagnosis of intussusception via imaging. Surgical intervention corrected the intussusception, and post-operative care ensured an uneventful recovery. This case highlights the importance of considering intussusception in puppies with chronic gastrointestinal symptoms, especially when parvoviral enteritis is involved. Timely surgical intervention and supportive therapy were crucial for the puppy's successful recovery.

Conflict of Interest: Not available.

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