



Pylorogastric intussusception in a Chihuahua puppy. A case report

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KEYWORDS

Canine;
Pylorogastric
intussusception;
Ultrasonography;
Chihuahua.

Abstract A three-month-old Chihuahua dog was presented with acute abdominal pain, vomiting and cardiovascular shock. Abdominal ultrasound (US) and iodated contrast gastrogram revealed suspected pylorogastric intussusception. Because of the poor prognosis the dog was euthanatized. Diagnosis of pylorogastric intussusception was confirmed at necropsy. Parasitological, virological, serological and histological examinations were also performed. This report documents the sixth case of pylorogastric (i.e. duodenogastric, gastrogastic) intussusception in the veterinary medical literature and it is the first report on a puppy dog in which US and radiographic diagnosis were confirmed post mortem.

Sommario Un Chihuahua di tre mesi è stato visitato con anamnesi di addome acuto, vomito, e shock cardiovascolare. L'ecografia addominale e i radiogrammi gastrici con mezzo di contrasto iodato rivelavano la presenza di un'intussuscezione pilorogastrica. A causa della prognosi non favorevole il cane è stato sottoposto a eutanasia. La diagnosi di intussuscezione pilorogastrica è stata confermata alla necropsia; sono stati eseguiti gli esami parassitologici, virologici, sierologici, e istologici. Questo caso clinico rappresenta la sesta segnalazione di intussuscezione pilorogastrica (i.e., duodeno gastrica, gastrogastrica) nella letteratura scientifica veterinaria e rappresenta il primo caso per un cucciolo in cui la diagnosi ecografica e radiografica è stata confermata alla necropsia.

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Introduction

Intussusception is defined as a prolapse of a part of the intestine into the lumen of an immediately adjoining part and has been reported in both humans and animals. In dogs

and cats intussusception most commonly occurs at the ileocecolic junction where invagination is usually in the normal direction of peristalsis. Occasionally invaginations occur in the reverse direction (oral direction) within the small intestine and in other parts of the alimentary tract (i.e. gastroesophageal, pylorogastric or duodenogastric intussusceptions) [1,3,5,7,10]. Our report describes the first case of pylorogastric intussusception in a puppy of a small-breed dog along with clinical, radiological, US and post mortem findings.

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Case history

A three-month-old, female Chihuahua dog, 650 g body weight (BW), with an acute history of abdominal pain, vomiting and hypovolemic shock was presented to our clinic. The vomiting had occurred on a few occasions during the previous week.

At the time of the examination, clinical findings included lethargy, dehydration (approximately 8%) and hypothermia (36.5 °C). The dog's abdomen was tense on palpation. A complete blood count (CBC), serum biochemical analysis (SBA) and urinalysis (UA) were performed, and therapy with intravenous (IV) lactated Ringer's solution (LRS) was administered.

Clinicopathological abnormalities included moderate leukocytosis ($21.07 \times 10^3/\mu\text{L}$; reference range (RR): $5.5\text{--}16.9 \times 10^3/\mu\text{L}$), high neutrophil count ($13.82 \times 10^3/\mu\text{L}$; RR: $2\text{--}12 \times 10^3/\mu\text{L}$) and monocytosis ($3.26 \times 10^3/\mu\text{L}$; RR: $0.1\text{--}1.4 \times 10^3/\mu\text{L}$). Serum biochemical abnormalities included hypoproteinemia (4 g/dL; RR: 5.7–7.7 g/dL), hypoalbuminemia (1.6 g/dL; RR: 2.6–4 g/dL), low calcium levels (7.6 mg/dL; RR: 8–12 mg/dL) and hypocholesterolemia (73 mg/dL; RR: 110–300 mg/dL). Electrolytes presented moderate hyponatremia (140 mmol/L; RR: 146–154 mmol/L), hypochloridemia (97 mmol/L; RR: 107–125 mmol/L) and mild metabolic alkalosis (27 mmol/L; RR: 14–24 mmol/L), while hematic pH was 7.44. UA showed a specific gravity of 1.015 with aciduria (urine pH 6).

Intravenous fluid therapy was continued using 0.9% sodium chloride solution (6 mL/kg BW/hour), ranitidine (4 mg/kg BW) and cefazolin (22 mg/kg BW).

Abdominal radiograph showed distension of the gastric area. Abdominal US examination was performed (General Electric Logic 5 Expert) using a 7.5–10 MHz convex probe in order to evaluate the cause of the abdominal pain; the stomach was distended and filled with fluid, and the pyloric region appeared laminated, while the pylorus and proximal duodenum were displaced into the pyloric antrum and fundus. In addition, multiple concentric echogenic and echolucent rings were visible. A severe hypoechoic gastric mucosal layer caused by edema was also present (Fig. 1).

Radiographic evaluation of the stomach and duodenum using iodated contrast medium showed double lines into the gastric lumen associated with abnormal distension of the stomach. Radiographic analysis 45 and 120 min after ingestion of iodated contrast media demonstrated weak propulsion of the contrast medium and a double layer into the gastric lumen.

Diagnosis of pylorogastric intussusception was made, and the dog was euthanized because of the poor prognosis. Diagnosis was subsequently confirmed at necropsy, but the clear causes were not found. Parasitological, serological and virological examinations were negative, while histological examination revealed diffuse superficial erosion of the gastric mucosal layer (Fig. 2).

Discussion

Previous reports have described pylorogastric intussusception in dogs, where the distal segment (duodenum) was the intussusceptum prolapsing into the stomach [1,6,14].

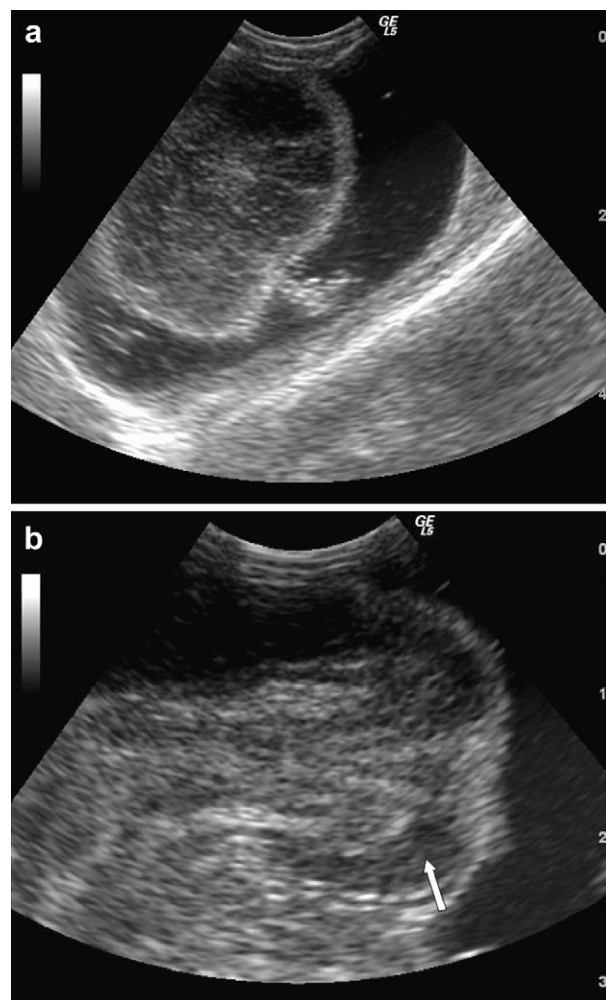


Fig. 1 US examination of the pylorogastric intussusceptions. (a) Transverse image of the pyloric region. Multiple concentric echogenic and echolucent rings were visible. (b) Longitudinal image of intussusceptions seen in (a); pylorus and proximal duodenum were displaced into the pyloric antrum and fundus; severely hypoechoic gastric mucosal layer caused by edema (arrow).

Intestinal intussusception is usually described in dogs of less than one year of age and it commonly occurs at the ileocecolic junction. The vast majority of cases of intussusception is of unknown origin [5,9,11,12,14]. In young dogs, enteritis (viral, parasitic or immunomediated) and general anesthesia, with or without abdominal surgical procedures, have been identified as possible predisposing factors. In dogs with pylorogastric intussusception, the cause or underlying etiological factors are unknown. Most cases of intussusception occur within the small bowel in the aboral direction. In this case, the dog presented pylorogastric intussusception in which the pylorus and proximal duodenum were invaginated in the oral (i.e. retrograde) direction into the body of the stomach. There are only five previously reported cases of pylorogastric/duodenogastric intussusceptions in the veterinary medical literature.

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