

TREATMENT OF GASTRIC INFILTRATIVE LYMPHOMA IN CAT TRATAMENTUL LIMFOMULUI GASTRIC INFILTRATIV LA PISICĂ

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ABSTRACT | REZUMAT

A 7-years-old, 3,5 kg Birman cat was evaluated because of a history of anorexia, regurgitation, vomiting, and lack of weight gain.

Radiographic and ultrasonographic examination included a gastric wall thickening, thickened pylorus without normal pylorogastric serosal continuity and stenotic pyloric outflow orifice. Diffuse infiltration of the stomach wall with thickening at the level of greater curvature and pyloric antrum was observed during exploratory laparotomy. A gastrectomy of the greater curvature of the stomach with end-to-end gastroduodenostomy (Billroth I procedure) was successfully performed. Four weeks after surgery, the cat was eating and drinking normally. Occasional vomiting one week after surgery was managed medically. Four weeks after surgery, the owner reported that the cat seemed normal in appearance and behavior, but she declined the chemotherapy plan proposed.

A gastric neoplasia was suspected at the time of surgery and postoperative histologic examination of the excised tissue revealed a gastric lymphoma.

The cat of this report was treated successfully with a Billroth I procedure.

Keywords: Billroth 1, cat, lymphoma, neoplasia

O pisică Birmaneză în vârstă de 7 ani și cântărind 3,5 kg, a fost prezentată pentru examinare, cu istoric de anorexie, regurgități, vomă și pierdere în greutate.

Examenul radiologic și cel ecografic au evidențiat îngroșarea peretelui abdominal, îngroșarea orificiului piloric fără continuitate fiziologică a seroasei pilorogastrice și de asemenea stenoza orificiului piloric. Infiltrarea difuză a peretelui gastric de la nivelul mării curburi și a antrului piloric a fost observată în timpul laparotomiei exploratorii. Gastrectomia mării curburi a stomacului și gastroduodenostomia (procedura Billroth I) au fost realizate cu succes. La patru săptămâni postoperator, pisica prezenta apetit normal. Voma ocazională la o săptămână postoperator a fost tratată medicamentos. La patru săptămâni postoperator, proprietara a declarat că pisica arată și se comportă normal. Planul de chimioterapie postoperatorie propus a fost refuzat de către proprietară.

O formațiune neoplazică a fost suspectată în momentul operației, iar examenul histologic postoperator al țesutului excizat a evidențiat limfom gastric.

Gastrectomia și procedeul Billroth I de anastomoză au fost utilizate cu succes în acest caz.

Cuvinte cheie: Billroth 1, pisică, limfom, neoplazie

Lymphoma is the most common neoplasm in cats, representing 30% of feline tumors (5).

Lymphoma in cats is associated with a bimodal age distribution, with a peak occurring at 4 year of age and another occurring at 8 year of age (12). Siamese cats and male cats have also been associated with a higher risk of development of lymphoma (2, 8).

Anatomically, feline lymphoma may be mediastinal, gastrointestinal, nodal, multicentric, or extranodal (with renal and nasal most common) (13).

Gastric lymphoma is a relatively uncommon pre-

sensation of feline lymphoma. A recent report found 24% of feline gastrointestinal lymphoma cases involved gastric tumors, but only 18% were exclusively in the stomach, with a predominance of large B-cell lymphoblastic lymphoma diagnosed (24).

The purpose of this study is to describe a case of a feline gastric lymphoma in regards to signalment, clinical presentation, laboratory, surgical treatment and outcomes.

MATERIALS AND METHODS

A 7-years-old 3.5-kg intact female Birman cat was referred to the Department of Surgical Techniques, Faculty of Veterinary Medicine of Cluj-Napoca,

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for evaluation because of anorexia, vomiting, regurgitation and lack of weight gain. The clinical signs were observed 7 days earlier. Regurgitation occurred mostly after feeding, and the cat was vomiting approximately 2 times daily. The cat was approximately 10% dehydrated and lethargic, with a body condition score of 4 (scale, 1 to 9) (17). An abdominal mass was palpated in the cranial abdomen. A CBC, serum biochemical analysis, FIV and FeLV were performed. Abdominal radiographs and ultrasonography were also performed. The abnormalities included: neutropenia, lymphocytosis, hypoglobulinemia and low total protein concentration. Results of FIV and FeLV were negative. Radiographic findings included decreased detail in the mid abdominal region due to stomach wall hypertrophy (wall thickness, approx. 1.3 cm), fluid and gas accumulation in the stomach lumen, and caudal displacement of other abdominal viscera. Administration of barium sulfate highlights the thickening of the gastric wall and abnormal aspect of the gastric mucosa. Abnormal barium passage and stenosis of pylorus were evident, outflow of gastric content was irregular and the small bowels was filled with fluid and gas (Fig. 1). On the basis of these findings, a tentative diagnosis of gastric neoplasia was assessed. Ultrasonographic investigation revealed diffuse hypoechoic aspect, increase thickening (wall thickness, over 1 cm), and loss of the normal layered appearance of the gastric wall (Fig. 2). The stomach was filled with gas and gastric motility is diminished, presence of luminal gas echoes associated with hypoechoic aspect of gastric wall produce a transmural-circumferential aspect (22). Area with increased echogenity was present in the gastric wall and hypoechoic masses associated with the gastrointestinal tract were seen (Fig. 2). The relatively hypoechoic homogenous echotexture of the gastric lesion, the fairly smooth margins and the increase thickening of the gastric wall over 6 mm suggested a gastric neoplasia, probably lymphoma (11, 20). Abdominal lymphadenopathy was present and no anechoic free fluid was found within the abdomen. Ultrasonographic diagnoses included pyloric outflow obstruction with abnormal gastric wall thickness and abdominal lymphadenopathy.

Following premedication with pethidine (5 mg/kg) SC, an over-the-needle catheter was inserted in a cephalic vein, and anesthesia was induced via IV administration of diazepam (0.25 mg/kg IV) and propofol (2.5 mg/kg IV). The cat was intubated, and anesthesia was maintained with isoflurane in oxygen. A gastrectomy and gastroduodenostomy (Billroth I) procedure

was performed after the discussions with the owner. Cefazolin (22 mg/kg) was administered intravenously and exploratory celiotomy via a ventral midline approach was made. A palpable thickening of the greater curvature and pyloric region of the stomach was observed (Fig. 3). All other organs were normal macroscopically. Stay sutures (3-0 PDS) were placed in the stomach and duodenum adjacent to the proposed gastrectomy site. Margins of resection for the greater curvature and pylorus were 2 cm. Branches of the right gastric and gastroepiploic arteries and veins supplying the pylorus were identified and ligated. A Doyen forceps was placed at the level of proximal duodenum. The greater curvature of the stomach and pylorus were transected with a Metzemaum scissor. The duodenum and the remaining stomach were anastomosed with 4-0 polydioxanone suture in a simple interrupted pattern (Fig. 4). More than 70% of the gastric wall was resected (Fig. 5). Lavage of the surgical peritoneal cavity was performed with sterile saline solution, and the abdomen was closed with PDS and nylon.



Fig. 1. Latero-lateral exposure of the abdomen. Increase thickness of the gastric wall, pyloric stenosis, abnormal gastrointestinal content outflow. 79 kV, 25 mAs

Recovery from anesthesia was uneventful.

Immediate postoperative care included IV fluid therapy with lactated Ringer's solution (4 mL/kg/h) and a constant rate infusion of fentanyl (5 µg/kg/h, IV) for analgesia. Famotidine (0.1 mg/kg, q 12 h) was administered SC. Small amounts of high-calorie moist diet every 6 hours were administered starting with 24 hours postoperatively. On the second day following surgery, the cat presented weak appetite without signs of regurgitation and/or vomiting. The cat was sent home after 10 days of hospitalization. At that time, the cat was eating and drinking normally. Famotidine (0.5 mg/kg [0.23 mg/ and sucralfate (200 mg, q 8 h) orally were recommended to the owner. A protocol of prednisone and chlorambucil was proposed, but the owner declined the use of chemotherapy. Histologic findings were consistent with a diagnosis of gastric

lymphoma. Results of a follow-up physical examination four weeks after surgery were normal. The cat's appetite was good.

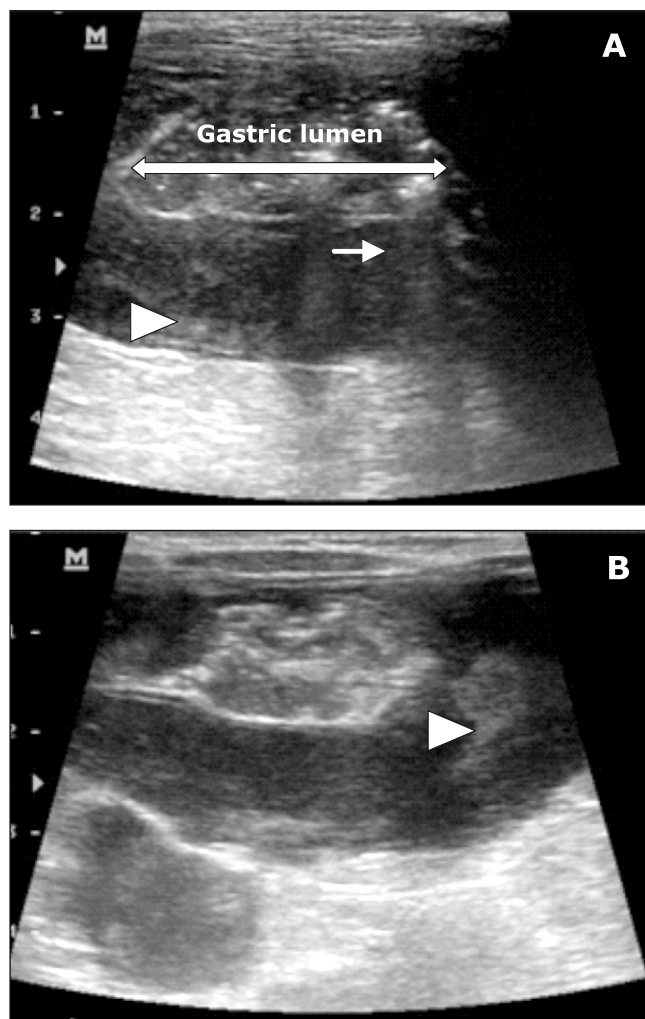


Fig. 2. A. Transvers sonogram of the stomach. Hypoechoic aspect and hypertrophy of the gastric wall (arrow head). Presence of gas in the gastric lumen (arrow). 7.5 MHz linear transducer;

B. Transverse sonogram of the stomach. Transmurall-circumferential aspect, areas with increase echogenicity in the gastric wall (arrow head), hypoechoic mass (arrow). 7.5 MHz linear transducer.

RESULTS AND DISCUSSIONS

The most common malignant tumor of the stomach in cats is lymphoma (29). This may be solitary or represent one site of systemic involvement. Gastric lymphoma is not generally associated with feline leukemia virus infection. The median age of cats with gastrointestinal lymphoma is 9 to 13 years (12). Imaging, including thoracic and abdominal radiography and ultrasonography, is indicated in all animals suspected

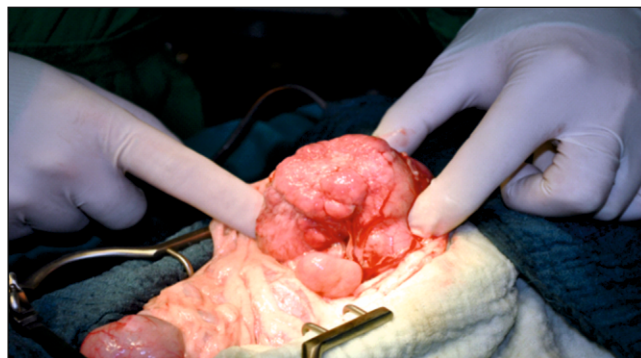


Fig. 3. Gastric wall mass



Fig. 4. Gastrooduodenostomy (Billroth I procedure)

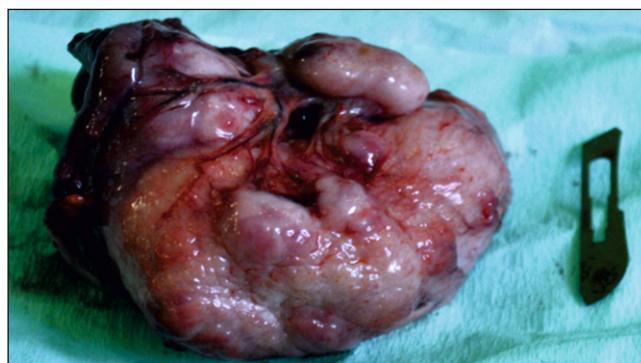


Fig. 5. The resected mass

to have gastric masses and may aid in the identification of possible metastatic disease. The cause, however, cannot be differentiated based on any imaging modality (1, 4; 9; 10; 14; 18; 23; 25).

Although endoscopic examination and biopsy of gastric lesions may be helpful in some diseases, tissue samples adequate to achieve definitive diagnosis may be difficult to obtain (7; 26; 31). Based on these considerations we did not perform any endoscopic evaluation for the cat. In a series of cats, results of endoscopic biopsy and full-thickness biopsy of the stomach were compared (7). Lymphoma was diagnosed via full-thickness biopsy in four cats; in those same cats, endoscopic biopsy was diagnostic for lymphoma in

three and suggestive of lymphoma in one. In two cats with inflammatory bowel disease confirmed by full-thickness biopsy, results of endoscopic biopsy were suggestive of lymphoma. There is some discordance in the literature regarding the histological type (primarily cell size: small versus large), immunophenotype, and architecture involved with GI lymphoma. While studies (often older or smaller reports) suggest a majority of B-cell immunophenotypes (28;24), larger, more recent reports (21; 16; 29) indicate the majority represent mucosal low-grade T-cell immunophenotypes. The largest compilation to date ($n = 120$), by Moore and others classified GI lymphomas based on immunophenotype, then as either mucosal (infiltrate confined to mucosa and lamina propria with minimal submucosal extension) or transmural (significant extension into submucosa and muscularis propria). They then compared infiltration patterns with the WHO classification scheme, (27), as well as documenting anatomic location, cell size, presence of epitheliotropism, clonality, and outcome data. The vast majority of T-cell variants were mucosal (equivalent to WHO enteropathy-associated T-cell lymphoma [WHO EATCL] type II), and the vast majority of B-cell tumors were transmural (equivalent to WHO EATCL type I classification). Regarding cell size, nearly all mucosal T-cell tumors were composed of small lymphocytes, and slightly more than half of transmural T-cell and all B-cell variants were composed of larger cells. Epitheliotropism is present in approximately 40% of T-cell tumors but is rare in B-cell tumors. Other abdominal organ involvement is common, and in one report of 29 cases of low-grade T-cell intestinal lymphoma, liver and mesenteric involvement was documented in 53% & 33% of cases, respectively (2).

Hepatic lymphoma can occur concurrently with GI lymphoma or be confined solely to the liver (19; 30). Most are T-cell and clonal or oligoclonal based on PCR analysis. The role of surgery in cases of neoplastic or infiltrative disease of the stomach is primarily diagnostic but may be therapeutic in some cases (28). In a study of 21 dogs with either gastric adenocarcinoma or leiomyosarcoma, pylorotomy (Billroth I) or gastrojejunostomy (Billroth II) were performed in nine cases to relieve outflow obstruction and alleviate clinical signs. The remaining dogs underwent biopsy, had partial gastrectomies or were not treated. Of the 21 dogs, only two dogs survived greater than 9 weeks (26). These survival data are likely associated with the extent of local and distant disease. Metastatic disease was documented at the time of diagnosis in 75% of

these cases. In another study, dogs with malignant neoplasia that underwent pylorotomy and gastroduodenostomy had a median survival of 33 days (6).

The prognosis for cats with gastrointestinal lymphoma depends on tumor classification. Intermediate and high grade lymphomas are usually rapidly progressive and fatal despite treatment, but cats with low-grade (well-differentiated, small cell) lymphoma have a median survival time of 704 days with chemotherapy (e.g., prednisone or chlorambucil) (15).

We consider that the removal of the mass was done completely in our patient. According to the literature (32), the need for post-operative chemotherapy after "complete" resection of lymphoma is unknown. Anyway, the owner declined the use of any chemotherapy protocol for the cat in this study. The use of the Billroth I procedure to treat this condition in the cat and the treatment resulted in resolution of the clinical signs associated with gastric lymphoma.

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