Scientific Works. Series C. Veterinary Medicine. Vol. LXX (1), 2024
ISSN 2065-1295; ISSN 2343-9394 (CD-ROM); ISSN 2067-3663 (Online); ISSN-L 2065-1295

# CLINICAL APPROACH AND EFFECTIVENESS OF THERAPY WITH SOME ANTIULCER DRUGS IN DIGESTIVE DISEASES IN DOGS

**Ionuț Răzvan DOBRE, Marian GHIȚĂ, Andrei MARMANDIU**

University of Agronomic Sciences and Veterinary Medicine of Bucharest, Faculty of Veterinary Medicine, 105 Splaiul Independentei, District 5, 050097, Bucharest, Romania

Corresponding author email: drrazvandobre@gmail.com

***Abstract***

*An important share in canine digestive pathology is represented by gastrointestinal ulcers of various causes. Between them, gastritis, ulcers, hypergastrinemic syndromes and last but not least the prevention and combating of the unwanted effects of non-steroidal anti-inflammatory therapy, can occur in carnivores when the protective factors are disturbed or compromised. In such situations, administration of proton pump inhibitors, H2 receptor antagonists or local antacids is routine and of undeniable utility. Our study was carried out on 12 clinical cases that presented to the veterinary clinic, dogs of different breeds and ages, both female and male, in which the therapeutic efficiency was monitored after the administration of drugs to combat acidity.*
*After performing the treatment, healing occurred in 91.66% of cases, failure registering 8.33% of the total.*
*A correct and complete clinical approach, with carefully chosen and regularly administered drugs, increases therapeutic efficacy in multicausal canine ulcer pathology.*

***Key words:*** *antiulcer drugs, digestive diseases, dogs, therapy.*

## INTRODUCTION

When the protective factors of the gastric mucosa are compromised or disturbed, are created the conditions for the appearance of ulcers in animals, particularly small animals, the most affected appear to be dogs (Allen et al. 1993).
Gastrointestinal ulcers are a major health problem in dogs and a predisposing factor is the use of ulcerogenic drugs (NSAIDs, corticosteroids or gastrointestinal irritants), on one hand and stress, inflammatory diseases, even breed predispositions, on the other hand (Dobre, 2019; Dobre et al., 2019; Ghiță, 2021; Goran, 2016).
If it is damaged, the protective barrier of the gastroduodenal mucosa allows hydrochloric acid, bile acids and proteolytic enzymes to begin degrading the intestinal epithelium, disrupting the lipid membranes and initiating the inflammatory process (Blois, 2020).
Clinical signs in dogs, as in pigs, horses and zoo animals, are absent or most often non-specific, represented by vomiting, anorexia, abdominal pain and weight loss. The occurrence of this disease in pigs causes economic losses through organoleptic changes in the meat (Petcu, 2013; Petcu, 2015).
The antacids, those based on Al, Mg or Ca, are used for their effect of neutralizing acidity, reducing pepsin activity and stimulating local prostaglandin synthesis.
H2 receptor antagonists such as cimetidine and or ranitidine are used in doses of 10 mg/kg (cimetidine) and 2 mg/kg (ranitidine), twice a day, as blockers of gastric acid secretion. (Papich, 2018).
In addition, proton pump inhibitors, such as omeprazole or pantoprazole are used to interfere with the final step of acid production, with a maximum inhibitory effect in 2-4 days (Kromer et al., 2000).
The aim of the present study is to evaluate the therapeutic effectiveness of antacid drugs in ulcer disease in dogs (the dogs were diagnosed with ulcer disease on presentation to the veterinary clinic).

## MATERIALS AND METHODS

The study was carried out on a number of 12 canine patients, both sexes. The patients were presented to the veterinary clinic with non-

specific digestive symptoms (vomiting, anorexia, abdominal pain, weight loss) and they underwent gastrointestinal endoscopy for the identification of ulcerative lesions (Table 1).

Table 1 Patients included in the study

| ID patient | Breed | Age | Weight | Sex |
|---|---|---|---|---|
| 1 | Rotweiller | 6 yo | 35 kg | ♀ |
| 2 | Setter | 4 yo | 32 kg | ♂ |
| 3 | Jack Russel | 7 yo | 8 kg | ♀ |
| 4 | Caniche | 4 yo | 4.5 kg | ♂ |
| 5 | Ciobănesc | 2 yo | 41 kg | ♂ |
| 6 | Mixed | 8 yo | 14 kg | ♂ |
| 7 | Akita Inu | 5 yo | 39 kg | ♂ |
| 8 | Pug | 6 yo | 11.5 kg | ♀ |
| 9 | Mixed | 3 yo | 11 kg | ♂ |
| 10 | Golden Retriever | 2 yo | 31 kg | ♂ |
| 11 | Mixed | 5 yo | 13 kg | ♀ |
| 12 | Mixed | 10 yo | 16 kg | ♀ |

Following the endoscopy, gastric ulcer lesions were identified (Figure 2). A perforated ulcer was identified in patient ID 6.
The patients included in the study were treated with local antacids Gaviscon oral suspension 10 ml three times a day every, and with H2 receptor inhibitors, ranitidine (Zantac) 2 mg/kg/day, respectively proton pump inhibitors (PPI), pantoprazole (Controloc) 1 mg/kg/day, according to the therapeutic scheme shown in Table 2. Were used Zantac injectable 50 mg s.a., (2 ml vials) and Controloc 40 mg s.a./vial.

Table 2. Amounts (ml/animal) of solution administered to patients taking into account body weight

| Drug / ID Patient | Controloc IV | Gaviscon PO | Zantac IM |
|---|---|---|---|
| **1** | 8.8 daily | 10 tid | 2.8 daily |
| **2** | 8 daily | 10 tid | 1.3 daily |
| **3** | 2 daily | 10 tid | 0.6 daily |
| **4** | 1.1 daily | 10 tid | 0.4 daily |
| **5** | 10 daily | 10 tid | 3.3 daily |
| **6** | 3.5 daily | 10 tid | 1.1 daily |
| **7** | 9.8 daily | 10 tid | 3.1 daily |
| **8** | 2.9 daily | 10 tid | 0.9 daily |
| **9** | 2.8 daily | 10 tid | 0.9 daily |
| **10** | 7.8 daily | 10 tid | 2.5 daily |
| **11** | 3.3 daily | 10 tid | 1.0 daily |
| **12** | 4 daily | 10 tid | 1.3 daily |

Zantac was administered IM daily, and Controloc was administered IV, in the morning after reconstitution with 10 ml of saline for injection, in amounts calculated according to body weight, as can be seen in Table 2.

Figure 1. Gastric ulcer in the cardia area in a dog

The treatment was carried out for 10 days, following the evolution of the clinical picture.
The response to therapy was monitored by improvement of clinical signs after 5 days of treatment. The treatment was continued for an additional 5 days in patients who did not respond to treatment within the first 5 days.
The effectiveness of the treatment was evaluated as reported by the therapy outcome, by sex and by age group.

## RESULTS AND DISCUSSIONS

Therapy was instituted after clinical examination and diagnosis of ulcerations by gastrointestinal endoscopy, hematological and biochemical examination. Abdominal radiography was helpful only in case of perforated ulcer, which was encountered in our study only in patient ID 6.
The clinical manifestations highlighted during the clinical examination were vomiting, diarrhea, inappetence and abdominal reactivity as can be seen in Figure 2.

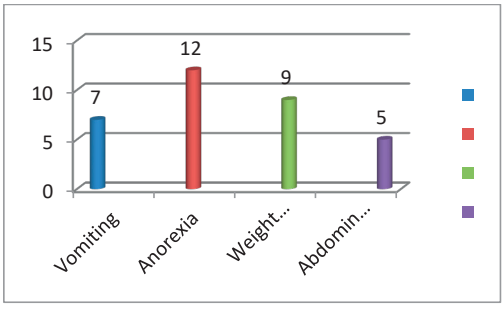


Figure 2. The main clinical manifestations in the studied animals

Regarding the gender distribution, 7 cases out of the 12 studied were represented by males,

i.e. 58%, while females were 5 of the cases presented, respectively 42% (Figure 3).

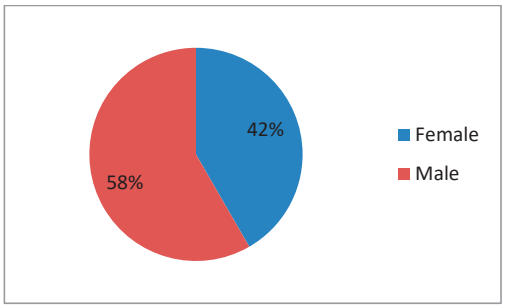


Figure 3. Incidence by gender of ulcer disease in the followed patients

Regarding the age of the patients, three of the cases fell within the age range of 1 to 3 years, 25%, six were 4 to 6 years, i.e. 50%, and three patients were over 6 years, respectively 25%, as can be seen from Figure 4.

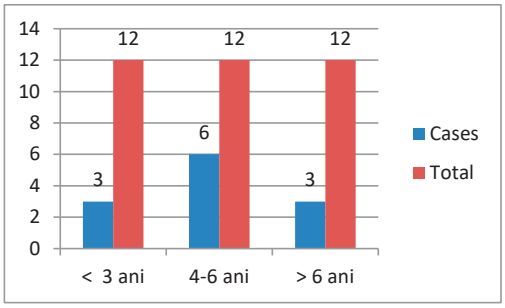


Figure 4. Distribution of cases by age category

As shown, the medication was administered daily to all patients, following their clinical evolution. For 7 of the canine patients, signs of improvement appeared beginning on the second, third day of the treatment.

Therefore, the favorable evolution led to the interruption of therapy after the 5th day of antacid medication administration. For the other 5 members of the studied group, in whom no improvement of the general condition was found, the therapy was continued for another 5 days. Patients with ID 1, 6, 7, 11 and 12 were further monitored on therapy as shown in Table 3.

Regarding the susceptibility to this disease, various factors can be invoked such as previous use of NSAIDs, genetic predisposition (in sled dogs) or poor maintenance that affects the body's resistance.

Table 3. Patients to whom therapy was continued for 10 days

| ID patient | Breed | Age | Weight | Sex |
|---|---|---|---|---|
| 1 | Rotweiller | 6 yo | 35 kg | ♀ |
| 6 | Mixed | 8 yo | 14 kg | ♂ |
| 7 | Akita Inu | 5 yo | 39 kg | ♂ |
| 11 | Mixed | 5 yo | 13 kg | ♀ |
| 12 | Mixed | 10 yo | 16 kg | ♀ |

We can observe that 3 of the five cases were female, that 1 patient is 10 years old or that 3 of them are of mixed race. The observations cannot represent a trend due to the small number of patients participants.

The prognosis formulated at the beginning of the treatment was reserved in the 11 cases of non-perforated ulcer diagnosed endoscopically, and severe in the patient with perforated ulcer.

In addition to specific therapy to reduce acidity, patients received supportive adjuvant therapy (fluidotherapy) and antibiotic protection in case of major gastric mucosal involvement.

Finally, the treatment yielded results in 4 more patients. Unfortunately, ID 6 patient, who initially had a perforated ulcer, died on the 8th day of treatment after surgery.

This means that in the framework of our approach, the effectiveness of the therapy is finally verified in 11 of the cases, i.e. in 91.6%, failure being represented by 1 case, respectively 8.4% (Figure 5).

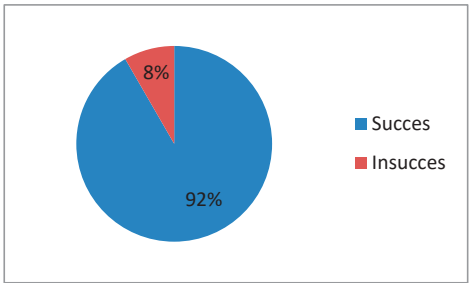


Figure 5. Rate of therapeutic success following drugs administration

In view of the almost unanimous opinion that frequent administration of antacids is disadvantageous to animals, the frequency of administration of Gaviscon every 8 hours could

be supported and appeared to count in ameliorating signs of disease.
Parenteral administration of the other drugs avoided problems such as oral administration of different drugs at different times to avoid interaction between them.
The administration of H2 antihistamines helped to protect the injured gastric mucosa, and undoubtedly contributed to supporting the prognosis, due to the increased efficacy of ranitidine compared to cimetidine and possibly also due to the prokinetic effect (Papich, 2018).
Even if more and more authors recommend the administration of PPIs twice a day, the solution selected by us (a single administration of pantoprazole daily) was not without results (Tolbert et al., 2015).
The efficiency of our therapeutic protocol has finally proven by the almost maximum proportion of cures.
Compared to the recommendation made for the duration of therapy in human medicine of 4 weeks, we appreciate as practice this approach of carrying out the therapy for a period of at least 10 days (Blois, 2020).

## CONCLUSIONS

The causes of gastric ulcers appearance in dogs are various, including therapy with NSAIDs, corticosteroids, gastric irritants, stress or breed predisposition.
The therapeutic protocol included an antacid (Gaviscon), an H2 antihistamine (Ranitidine) and pantoprazole (PPI), which were administered for 10 days.
In the study, there was no higher incidence in a certain breed, sex or age group.
The therapeutic efficiency was 91.66% healing.

## REFERENCES


Allen, A., Flemstrom, G., Garner, A., Kivilaakso, E. (1993). Gastroduodenal mucosal protection. *Physiol. R*ev. 73*,* 823–847.

Blois, S. (2020). Gastrointestinal ulcers in small animals. *MSD Veterinary Manual*.

Dobre, I.R., Alexandru, D.M., Crivineanu, M. (2019). Study on changes in haematological parameters following administration of NSAIDS in dogs. Scientific Works. Series C. Veterinary Medicine, Vol. LXV, Issue 1.

Dobre, I.R. (2019). Toxicologie veterinară. București, *Editura Printech*, 262-268.

Ghiță, M., Cotor, G. (2021). Special Pathophysiology. Bucuresti, *Editura Printech*.

Goran, G.V., Crivineanu, V. (2016). Toxicologie. *Editura Printech*, 281–287.

Kromer, W., Postius, S., Riedel, R. (2000). Animal pharmacology of reversible antagonism of the gastric acid pump, compared to standard antisecretory principles, Pharmacology. 60, 179-187.

Papich, M.G. (2018). Veterinary Pharmacology & Therapeutics. *Willey Blackwell 10th Edition* , 1254-1259.

Petcu, C.D. (2013). Researches concerning some meat products control in a specialized unit. Scientific Papers. Series D. Animal Science, LVI, 323-325.

Petcu, C.D. (2015). Calitatea și tehnologia cărnii. Editura Granada, București.

Tolbert, K., Odunayo, A.,Howell, R.,Peters E.E., Reed, A. (2015). Efficacy of intravenous administration of combined acid suppressants in healthy dogs. *J Vet Intern Med*. 29, 556-560.