



Evaluation of Enrofloxacin Toxication in A Tabby Cat

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Published

30.12.2022

To cite this article:

Eroğlu MS: Evaluation of Enrofloxacin Toxication in A Tabby Cat . Atatürk University J. Vet. Sci., 2(1-2): 6-8, 2022.

Abstract: This case report, it was aimed to give information about enrofloxacin toxicity in a cat. The case material consisted of an 8-month-old tabby female cat, weighing 1.4 kilograms, brought to the emergency department with complaints of vomiting, diarrhea, weakness, tremor, dyspnea and inability to walk. According to the anamnesis, it was stated that the appetite of the animal was not good and that he received antibiotic treatment. It was stated that after the treatment, the inability to walk and the incoordination took shape. It was determined by us while taking the anamnesis information that the patient's owners were continuing the antibiotic treatment. Likewise, it was learned that 0.7 ml (35 mg) of the preparation containing the active ingredient of enrofloxacin was administered. This dose was found to correspond to 5 times the normal dose of "0.14 ml (7 mg)". An ophthalmological examination was not performed. However, it was observed that he did not respond to the pupillary reflex. The case was evaluated as enrofloxacin toxicity. As a result, it was evaluated that high-dose enrofloxacin may result in vision loss, as in this case.

Keywords: Blindness, Cat, Enrofloxacin, Toxicity.

INTRODUCTION

Enrofloxacin is a bactericidal antibiotic belonging to the fluoroquinolone group. It is widely used in veterinary medicine. This group of antibiotics acts by inhibiting bacterial DNA transcription. The thawed bacterial DNA cannot be read, and the cell dies (1). Fluoroquinolone-group antibiotics are removed from the body by renal and hepatic routes. It has a 100-1000 times greater effect on bacterial cells than it does on eukaryotic cells. The reason for this difference is that for the enzyme analogue of bacterial DNA gyrase, the sensitivity of gyrase inhibitors is higher in prokaryotic cells (2).

Enrofloxacin was approved for use in cats in 1990 at a dose of 2.5 mg/kg in the United States. It has also been used in dogs and cattle in the ongoing process. FDA approved enrofloxacin after passing mandatory toxicological testing in dogs and cats. In 1992, it was stated that it was safe to use in young cats at doses of 5, 10, and 25 mg/kg. On the other

hand, in 1997, the flexible use of a per oral (PO) dose of 5–20 mg/kg became widespread. Vision problems in cats were later reported. These problems have been reported as total or partial blindness and mydriasis (3).

Researchers suggested a possible link between enrofloxacin administration and vision problems in cats in two reports published between 1999 and 2001. Then, during the study conducted by the American College of Veterinary Ophthalmologists, fundic symptoms were observed 1 week after the most severe ocular effect of 50 mg/kg/day (approximately 2.5 times the approved dose range). No change was observed in cats administered 5 mg/kg/day (ie, the lower limit of the approved dosage range). In 2001, the FDA approved an oral dose of 5 mg/kg/day for cats. There is a link between the use of high-dose enrofloxacin in cats and vision problems (4,5). The use of the aforementioned active

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substance is quite common in the field of feline medicine. The aim of this case report is to reveal the pathologies that may occur due to the use of high-dose enrofloxacin to break the resistance that develops due to antibiotic use.

CASE REPORT

An 8-month-old, 1.4 kg, female, tabby breed cat was brought to Atatürk University Veterinary Faculty Animal Hospital with a complaint of dyspnea. In clinical examination, 160/min (pulse), 35.5 °C (rectal temperature), and 60/min (respiration) are the first findings. Salivation, lacrimation, and abdominal respiration were detected on clinical examination. Vomiting and diarrhea were among the findings obtained while taking anamnesis information. At the same time, it was learned that it received treatment for loss of appetite and that the treatment was administered by the patient's owner. In addition, loss of reflex and abnormal gaze were detected in the eye. During the examination, it was determined that it created threat reactions. It was determined that the retina did not react to the light source held on the pupil. There was a lack of in body involvement. In addition, it was determined that it did not avoid the object slowly brought closer to the eye. It was determined that the antibiotic was used while taking the anamnesis, and it was determined that the antibiotic was a commercial preparation containing the active ingredient (Baytril-K 5%, 50 mg enrofloxacin in 1 ml) and was administered sc at a dose of 0.7 ml (35 mg enrofloxacin). Considering the weight of the cat, the dose to be administered was determined as 0.14 ml (7 mg enrofloxacin). The administered dose was 5 times the normal dose. As an emergency intervention, 100 ml isotonic IV administration was started. Oxygen therapy and treatment of hypothermia were aimed by taking her to the intensive care unit. In addition, hot water tampons were applied. Furosemide was used at a dose of 3 mg/kg (Diuril®) and mepyramine maleate at a dose of 1 mg/kg (Histavet®) IV. Because there was no antidote for enrofloxacin, the patient's stability

was monitored. Before treatment, whole blood analysis was performed. For this purpose, blood was collected from *vena cephalica antebrachii* in a sterile tube containing EDTA (Vacutainer, K2E 3.6 mg, BD, UK). The results of the analysis are given in Table 1.

Table 1. Hematological findings of the case and normal reference values.

PARAMETER	RESULTS	NORMAL REFERENCE (7)
WBCs	12.6 x10 ³ /mCL	5.5-19.5 x10 ³ /mCL
LYM	5.10 x10 ³ /mCL	1.5-7 x10 ³ /mCL
NEU	7.42 x10 ³ /mCL	2.5-12.5 x10 ³ /mCL
EOS	0.02 x10 ³ /mCL	0-0.8 x10 ³ /mCL
RBCs	6.36 x10 ⁶ /mCL	5-10 x10 ⁶ /mCL
HGB	9.4 g/dl	9.8-15.4 g/dl
PLT	227 x10 ³ /mCL	300-800 x10 ³ /mCL



Figure 1. Clinical examination

DISCUSSION and CONCLUSION

Enrofloxacin is a kind of antimicrobial with bactericidal properties. It is widely used in pet animals such as cats and dogs. It has been reported that when used above the recommended dose, it impairs the transmission of nerve impulses of the retina and adversely affects neurological functions (5).

Blood values were evaluated in a study in which high-dose enrofloxacin was administered orally in cats. It was stated that there was no significant difference between the experimental groups and the control group. No specific changes were observed in

the reported case. The rectal temperature has been reported to be variable. It was stated that the number of heartbeats was higher than the control group. Likewise, it was reported that the respiratory rate increased, but did not show variable results between days. The cat in this case suffered from hypothermia. The heart rate and respiratory rate were both above the normal reference range (6).

In the same study, it was reported that oral use of enrofloxacin in cats caused blindness and abnormalities in the neurological, and musculoskeletal systems. It was stated that especially the female cats in the study experienced weight loss and were more sensitive to toxication. It has been stated that tense and threatening bodyhold is formed due to visual impairment. The resemblance of similar findings in the presented case explains the precision of our diagnosis (6).

The absence of fundoscopic examination in case reporting may be insufficient for diagnosis. However, it was thought that the case could be evaluated in terms of toxication in light of the anamnesis and clinical examination findings. This case report showed the reader the detrimental effects of high doses of enrofloxacin, such as vision loss.

Conflict of Interest

The authors declare that they have no conflict of interest.

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