

A Retrospective Analysis of a Feline Rabies Case in Baku, Azerbaijan

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Abstract

Rabies is a mandatory reportable disease in Azerbaijan and is endemic throughout the country. Wild carnivores, roaming dogs, and cats are considered the main sources of rabies and the natural reservoir. The characteristics of the populations of these animals, such as density and growth dynamics, are unknown, necessitating scientific and epidemiological research. In recent years, there has been an increasing focus on rabies cases, especially among domestic pets. The main objective of this research study is to retrospectively analyze cases of domestic cats presenting with symptoms of lethargy and vomiting, which may resemble rabies in the form of an agonal state, without a suspicion of rabies. The aim is to identify cases of rabies and raise awareness about the clinical manifestations of the disease. Additionally, this highlights the need for strengthening vaccination efforts among pet animals. Epidemiological investigations and research in this area are crucial to gain a better understanding of rabies dynamics in Azerbaijan and implementing effective preventive measures.

Keywords: rabies, retrospective, Azerbaijan, cat, disease, virus

Introduction

Viruses like Rabies (Lyssavirus, Family Rhabdoviridae) have the capability to infect humans and animals intensively and fatally. As a neurotropic virus, it binds to cell receptors, cytoplasm and transports across synapses in interneurons. In addition to causing fatal encephalitis, the rabies virus also affects other organs (Ichhpujani et al., 2008; Abubakar and Bakari, 2012). It usually takes 3-6 weeks for rabies to incubate, although it can take up to a year. Animal type, age, immune status, virulence, proximity to the brain, and characteristics of the wound determine the amount and duration of the infection (Rodney and Charles, 2020). There are usually three phases to rabies in animals: the prodromal phase, the excitation, and the paralysis phase:

The prodromal period lasts for 2-3 days. The bite area is licked frequently, exhibiting behavioural disorder, and feverish symptoms (Dietzschold, et al., 2000; Sarah et al., 2008; Nigar et al., 2016).

Period of excitation - lasts 2-4 days. In animals, timidity and cowardice appear first, followed by aggression. It is observed that the dog becomes more interested in foreign objects, less hungry, afraid of light and water, loses his memory, and disobeys his owner.

There is a period of paralysis that lasts 2-4 days. The bitten area first shows signs of paralysis, then all tissues. There are several symptoms that suggest rabies in general:

General sickness, swallowing difficulties, excessive saliva or drool, animals that are aggressive, animals that bite imaginary objects (sometimes called fly biting), animals that appear tamer than you'd expect, animals that are unable to move or may even be paralyzed, etc (McQuiston et al., 2016).

This study was designed to increase veterinarians' awareness of the degree of rabies symptoms in cats that had no rabies symptoms before and were rabies positive after retrospective analysis

Material and Methods

A cat named Winston was admitted to the Veterinary Clinic with symptoms of weakness, immobility, loss of appetite, persistent vomiting for several days, and excessive salivation. According to the owner, these symptoms began to occur after the cat was seen wandering around an area where rat poison had been placed. The owner reported losing the cat's passport and was unsure whether vaccinations had been administered.

Based on the examinations and analyses conducted, the cat was diagnosed with acute gastritis and treatment was initiated. After two weeks of treatment, a slight improvement in the cat's condition was observed. The cat started to move slowly and showed a decrease in salivation. However, despite the initial progress, 21 days after the initial examination, the cat was brought back to the clinic due to sudden respiratory distress and, despite the necessary resuscitation efforts, unfortunately, passed away. The cat had no contact with other animals during outpatient treatment and had not caused any harm to its owners. During its demise, the cat exhibited signs of bradycardia, tachycardia, visible cyanosis in the gums, excessive drooling from the mouth, muscle weakness, and paralysis.

The animal's agonal state raised suspicions of rabies, so after the animal's death, its body was sent to the Veterinary Laboratory of the Azerbaijan Food Safety Institute, which is the only rabies laboratory in the country, for rabies analysis. The head of the carcass was separated following biosecurity protocols, and relevant brain samples were taken for rabies analysis using Immunofluorescence Assay (IFA) and Polymerase Chain Reaction (PCR) methods.

Result and discussion

In the initial examination, no signs of injury were observed in the affected animal, which was a pet cat with no contact with other animals. Also, the cat had moved residence a few days before vomiting, loss of appetite, and weakness started, according to the owner's history. The cat was found in a dark area where rat poison had been thrown. Vitamin K was administered to the cat immediately due to the lethal effects of rat poison. A number of medications were administered due to the persistent vomiting, including Metoclopramide, Maropitant citrate, Omeprazole, and Almagel Plus, along with Metronidazole and other appropriate infusions. An abdominal examination was performed using ultrasound, contrast-enhanced X-rays, and non-contrast X-rays, and treatment was initiated. Inflammation and immune system stress usually cause leukopenia and neutropenia in the blood (Figure 1, 2, and 3).

A high temperature (40°C) on the 15th day of treatment was the only significant observation during the 21-day treatment period. The cat's general condition did not change on other days, and his temperature returned to normal. Having been unable to eat, the cat was given nasal feedings with a feeding tube. During this period, no signs of aggression or abnormal behavior were observed. The initial X-ray images with contrast and without contrast showed an image resembling a foreign object in the intestines, which initially suggested the need for bowel cleansing, and an enema was administered promptly. As a result of the enema, the cat produced greenish, unformed faeces, raising the possibility of poisoning from a foreign object. In the following days, the cat had diarrhoea, but towards the end of the treatment, the faecal consistency began to normalize.

On the 22nd day of treatment, a sudden change in the cat's condition occurred, and severe respiratory distress was observed. When brought to the clinic, the cat exhibited aggression, biting the veterinarian, and subsequently died of paralysis. It was precisely during the suspicion of rabies that the cat's death occurred, manifested by the immediate constriction of the pupils and third eyelids, as well as rapid dehydration. The body of the cat was sent to the laboratory for analysis, and upon retrospective evaluation, the cat's condition was assessed.

The laboratory examinations revealed the presence of Negri bodies and the virus in the brain tissues of the cat, indicating a diagnosis of rabies.

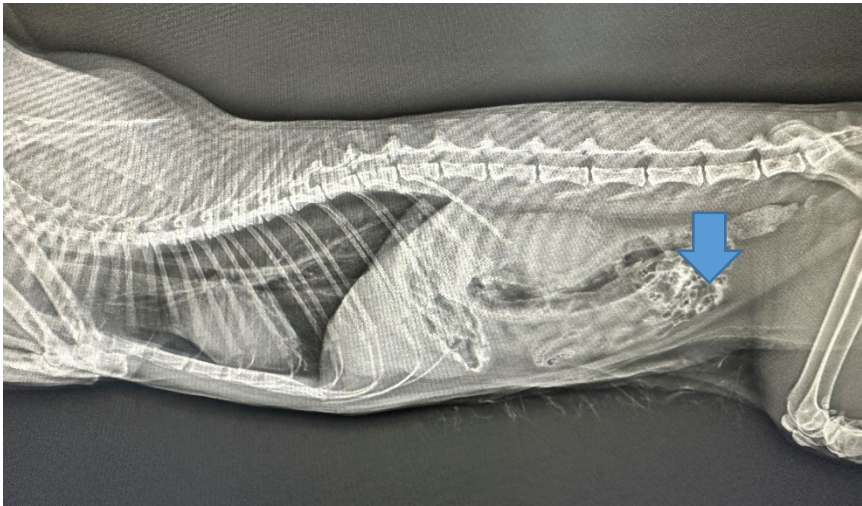


Figure 1. X-ray imaging with contrast

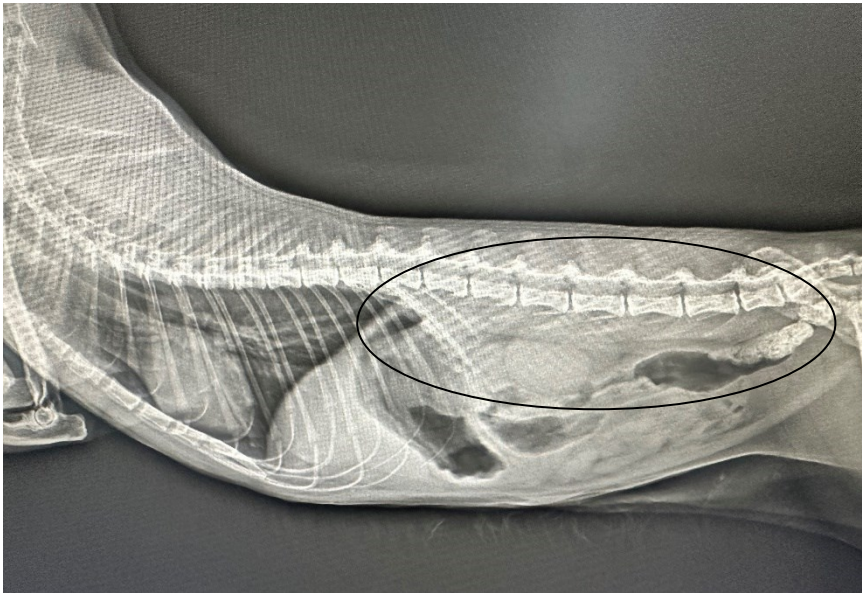


Figure 2. X-ray imaging without contrast

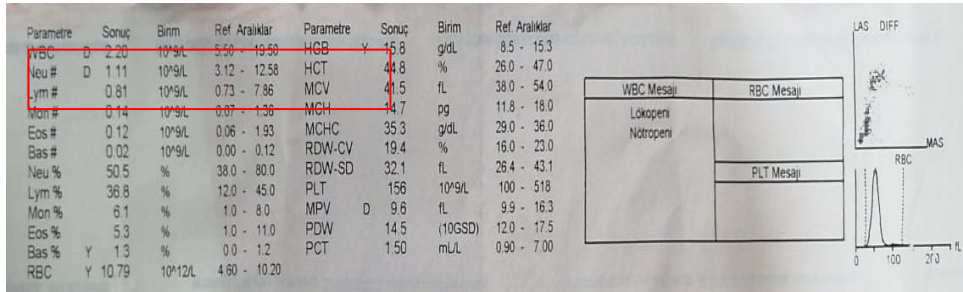


Figure 3. The result of the full blood count

Conclusion

The signs that were present during the period from Winston's admission to the clinic until the occurrence of his death, which did not initially raise suspicion of rabies but resembled it in retrospect, were as follows:

Upon admission, the cat remained immobile in one place, drooled from the mouth, and opening the cat's mouth was impossible. The brightness of the cat's eyes was reduced and dull. Throughout the day, the cat vomited 7-8 times. Later, stiffness was observed during movement, but no aggression or abnormal behavior was observed until the cat's final day. However, at the moment of death, abnormal aggression, attacking the veterinarian, and rapid dehydration significantly increased suspicion of rabies. The results of laboratory analysis confirmed this suspicion.

In retrospect, it can be determined that the fact that the cat was not found for a day and the uncertainty regarding vaccination had actually contributed to the suspicion of rabies. Furthermore, it was noted that not all of the signs mentioned in the literature were standard, including their appearance duration.

Therefore, veterinary professionals in this field should approach with greater caution and evaluate all suspicions without ignoring them for proper diagnosis. Additionally, veterinarians should emphasize the importance of vaccination against rabies for animals. Considering such real threats, rabies should be considered as an occupational disease for veterinarians, and proactive and protective vaccination measures should be taken regularly.

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