

## An Unusual Presentation of Rabies with Horner's Syndrome in a Dog

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**ABSTRACT:** A nondescript male dog, around one year old, was brought with a history of loss of appetite and limping in the right front leg. The dog had not received any vaccinations and had been treated previously by a local veterinarian for the loss of appetite. During the clinical examination, the dog showed difficulty in swallowing, anisocoria, protrusion of the third eyelid, miosis in right eye. The dog also had mild lameness in the right front leg, but no visible injuries were observed. Radiograph was taken, but it did not reveal any foreign bodies and no osseous involvement was found. The dog was kept under observation and gradually developed paralysis and collapsed. A postmortem examination was conducted, and Negri bodies were found. This case was confirmed as rabies, which had presented with an unusual Horner's sign.

**Keywords:** Horner's syndrome, Rabies.

### INTRODUCTION

Rabies has not been a major public health concern in India due to its non-notifiable status and limited diagnostic capabilities. Rabies is present throughout India except for the islands of Andaman, Nicobar, and Lakshadweep, with dogs being the primary source and responsible for spreading it to other domestic animals (Lakshmi *et al.*, 2021). Rabies is a highly dangerous viral disease that affects the central nervous system and has a high fatality rate. In animals, symptoms such as excitability, barking at inanimate objects and salivation are commonly observed in the encephalitic form of rabies. On the other hand, the paralytic form of rabies is characterized by a limp and weak paralysis starting from the bitten limb, which can spread either symmetrically or asymmetrically throughout the body (Debbie, 1974). However, the signs of rabies could vary, and some cases did not fit into these two forms. Atypical clinical and neuroimaging features of rabies were increasingly seen (Spickler, 2021).

Horner's syndrome involves the loss of sympathetic innervation to the eye, leading to symptoms such as

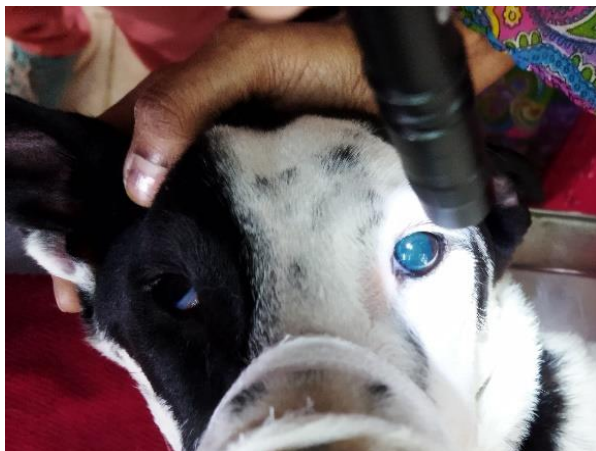
miosis, enophthalmos, eyelid ptosis and may be associated with monoparesis of the thoracic limb. Horner's syndrome involves three types of neurons: first-order neurons have cell bodies in the hypothalamus and rostral midbrain, their axons run to the T1 to T3 spinal cord segments, where they synapse on the second-order neurons. Second-order neurons, or preganglionic fibers, Third-order neurons, or postganglionic fibers. Horner's syndrome is classified based on the level of dysfunction within the oculosympathetic pathway, but the signs will be the same regardless of the lesion's location in small animals (Tetas and Diaz 2015).

In this article an unusual presentation of paralytic form of rabies with Horner's syndrome is described.

### MATERIALS AND METHODS

A one-year-old non-descript male dog was presented with the history of anorexia and limping of right fore limb. Animal was unvaccinated and treated by local veterinarian for anorexia. On clinical examination difficulty in swallowing, anisocoria, prolapse of third

eyelid and miosis on right eye and mydriasis on left eye were observed (Fig. 1 and 2). Animal had mild lameness of right fore limb and no visible injuries could be observed. Radiograph was taken which revealed no foreign body and no osseous involvement (Fig. 3). Animal was kept under observation. Animal died on next day and postmortem examination was done.



**Fig. 1.** Mydriasis on left eye.



**Fig. 2.** Prolapse of third eyelid and miosis on right eye.

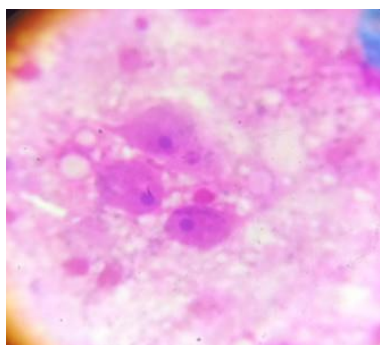


**Fig. 3.** Radiograph.

## RESULTS AND DISCUSSION

Horner's sign is a sympathetic nervous system manifestation (Zwueste and Grahn 2019). The suspected animal initially tested negative for rabies virus in the lateral flow assay kit but had Horner's syndrome and limbing of fore limb at the time of presentation, and did not exhibit any other specific neurological symptoms for rabies. But usually, rabies affects motor nerves during centripetal transmission

(Ugolini, 2011). However, it began to display symptoms of the paralytic form of rabies during the observation period. In postmortem examination Magenta coloured intracytoplasmic inclusion body (Negri Body) in the neuronal cytoplasm by William's modification of Von-Gieson staining in 100 x magnification was observed confirming the case as Rabies (Fig. 4).



**Fig. 4.** Magenta coloured intracytoplasmic inclusion body (Negri Body) in the neuronal cytoplasm.

This is an unusual instance of rabies where the initial presentation included Horner's syndrome, followed by the development of the paralytic form of the disease. There is a lack of documented cases reporting Horner's syndrome during rabies infection in animals according to available literature.

#### CONCLUSION

This research underscores the importance of recognizing the possibility of rabies as a potential

explanation when Horner's syndrome is evident. Further investigation is required to understand the underlying reasons for the occurrence of these atypical symptoms. Additionally, confirmation is needed to determine whether these signs are associated with the typical rabies strain or if they might be linked to different variants of the virus.

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