

Idiopathic trigeminal neuropathy in a golden retriever

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Abstract

A case of Golden Retriever with history of jaw paralysis, drooling of saliva and inability to feed orally was presented in Medicine OPD at multispecialty small animal referral hospital, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab. Neurological and laboratory evaluation revealed no abnormality. In the absence of any structural cause for the paralysis the case was diagnosed as Idiopathic Trigeminal Neuropathy (ITN). The dog recovered completely after 15 days with proper nursing care.

Cranial nerve V, the trigeminal nerve, is one of a symmetric pair that originates in the pons, travels through one of the cerebellar peduncles, through the canal within the petrosal portion of the temporal bone through the trigeminal ganglion to join the mandibular nerve (Lorenz *et al.*, 2011). The mandibular nerve exits the oval foramen and supplies the muscles of mastication (the masseter, temporalis, pterygoid, rostral digastricus and mylohyoideus muscles) (Hunta *et al.*, 2015). Unilateral loss of motor function is appreciated by masticatory muscle atrophy (Hunta *et al.*, 2015). An open mouth secondary to dropped mandibles implicates bilateral trigeminal neuropathy, as a unilateral neuropathy will not be sufficient to show a persistently 'dropped jaw.' Drooling and dysphagia often accompany this clinical sign.

An inability to close the mouth is a relatively common presenting complaint in dogs. Mechanical obstruction due to bilateral luxation of the temporomandibular joints (Ganesh *et al.*, 1995), oral foreign bodies or fractures of the mandible (Harvey 1993), or flaccid paralysis of the muscles innervated by the mandibular branch of the trigeminal nerve (i.e., mandibular paralysis) can lead to an inability to close the mouth. Careful examination of the oral cavity will usually distinguish flaccid mandibular paralysis from other causes.

The most common cause of acute-onset, inability to close the mouth ('dropped-jaw') is trigeminal neuropathy (i.e. trigeminal neuritis), a disease process that is idiopathic, bilateral, non-suppurative and affects all motor branches of the trigeminal nerve (Mayhew *et al.*, 2002).

Case History and Observations

A 9.5 year old female Golden Retriever dog weighing 30 kg was presented at Medicine OPD of multispecialty small animal referral hospital, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab. The chief complain of owner included jaw paralysis since past one week with drooling of saliva and inability to feed orally (Figure 1). The dog was properly vaccinated and there was no history of any past/ recent dog bite or trauma. On clinical examination the dog was apparently active, rectal temperature- 101°F, mucous membrane- pink with mild dehydration and normal lymph nodes. Palpation of neck along with oral examination for any physical obstruction, pain, growth or ulceration was done and no abnormality was detected. Complete neurological evaluation of head and cranial nerves for any sensory deficits, muscle atrophy and Horner's syndrome along with other cranial nerve deficits revealed no abnormality. Blood and serum samples were collected for hemato-biochemical evaluation along with X-ray of skull (jaw) in lateral and ventro-dorsal views. Results revealed Hb- 13.2 g/dl, TLC- 11,970 involving relative neutrophilia (N-82%, L-18%) along with mild toxic changes in neutrophils. Biochemical profile (ALT- 35 U/L, BUN- 10 mg/dl, Creatinine- 1.0 mg/dl, Phosphorous- 3.0 mg/dl) was within normal physiological range. X-ray revealed no abnormality in skull/ jaw. The case was diagnosed and handled as Idiopathic Trigeminal Neuropathy (ITN) as no structural cause for the paralysis was found, and if complete resolution occurred with no long-term neurological disease. The dog was given supportive therapy i.e., Methylcobalamin @ 5000 mcg intra muscularly once a day for 7 days along with proper counseling of owner regarding intermittent oral feeding

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Figure 1. Dropped Jaw with drooling of saliva



Figure 2. Recovery after 15 days of presentation

using syringe. The dog recovered completely after 15 days with complete mouth closure and normal food intake (Figure 2).

Discussion

Idiopathic trigeminal neuropathy (ITN) appears to be the most common neurological cause of inability to close the mouth in dogs and is also over-represented in Golden Retriever breed of dogs (Mayhew *et al.*, 2002). It is a diagnosis of exclusion and cannot be confirmed by any antemortem test. The etiology remains unknown, and because of complete recovery in this case, necropsy or biopsy material was unavailable in this report. The most common presenting signs in this case of ITN were mandibular paralysis, difficulty eating and drinking, and hypersalivation. No sensory deficits were detected during neurological examination. Other reports (Oliver *et al.*, 1997; Inzana 2000; Mayhew *et al.*, 2002) also state that sensory deficits are not a feature of ITN in dogs. The detection of sensory deficits during neurological examination may also vary based on an individual examiner's interpretation. Although no specific medications appear to be indicated for ITN, the dog in this report required significant nursing care. Tape muzzles were recommended to improve ingestion of food. As this dog was unable to grab food but swallow normally, it was recommended to place firm balls of moist food at the back of dogs' mouth. This dog required water to be given by syringe, as it was unable to lap significant quantities of water and became clinically dehydrated. The dog recovered completely with normal jaw moments after 15 days. Mean time to

recovery of motor function to the mandible in dogs with ITN has been reported as being in the range of 2 to 3 weeks (Oliver *et al.*, 1997 and Hoerlein 1978).

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