The Pharma Innovation Journal 2023; SP-12(7): 2200-2202

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(7): 2200-2202

www.thepharmajournal.com
Received: 15-04-2023
Accepted: 19-05-2023

Mohanraj M
Final Year Undergraduate Student, Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

Trupti Priya Lenka
PG Scholar, Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

Sumathi D
Professor, Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

Ravi R
Assistant Professor, Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

Kalaiyarasan V
Final Year Undergraduate Student, Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

Yogesh Priya S
Assistant Professor, Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

Aarsihaa RP
Final Year Undergraduate Student, Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

Corresponding Author:
Sumathi D
Professor, Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

Idiopathic peripheral vestibular disease in a geriatric spitz: A case report

Mohanraj M, Trupti Priya Lenka, Sumathi D, Ravi R, Kalaiyarasan V, Yogesh Priya S and Aarsihaa RP

Abstract
Idiopathic peripheral vestibular disease (IPVD) is a condition observed in old-aged dogs. Classical signs include - horizontal nystagmus, head tilting, circling, asymmetric ataxia & strabismus. A 13-year-old neutered geriatric female Spitz was presented to the small animal medicine unit of the veterinary clinical complex, VCRI Namakkal, with complaints of incoordination, circling, nystagmus, frequent yellowish vomiting, and anorexia 15 days before presentation. The condition was confirmed as an idiopathic peripheral vestibular disease based on clinical signs, diagnosis by exclusion, and response to treatment. The animal was treated with betahistine, prednisolone, and ondansetron orally for 21 days.

Keywords: Circling, head tilt, idiopathic peripheral vestibular disease, horizontal nystagmus

Introduction
The vestibular system functions to maintain balance. It adjusts the movements of the eyes, trunk, and limbs in accordance with the position of the head and the center of gravity, thereby maintaining equilibrium at rest and in motion (Lahunta & Glass, 2009) [5]. This system of proprioception consists of central and peripheral components. Vestibular nuclei in the medulla and vestibular projections to the cerebellum and spinal cord constitute the central component, while receptor organs in the inner ear and the peripheral axon of cranial nerve VIII constitute the peripheral component. Any disorder of the vestibular system might lead to loss of equilibrium, aberrant posture, and gait, as well as changes in eye position and movement (Kent *et al.*, 2010) [3].

Idiopathic peripheral vestibular disease (IPVD), also known as old dog vestibular disease, is seen in geriatric dogs. The etiology of this condition is undetermined, although potential reasons include improper endolymphatic fluid generation, circulation, and absorption; chronic otitis media; neuritis of the vestibular portion of the vestibulocochlear nerve; and aberrant migration of Cuterebra larvae (Schunk, 1988) [11]. Clinical signs are usually acute and severe in onset, including head tilting, horizontal nystagmus of eyeballs, strabismus, asymmetrical ataxia, and falling, rolling, or circling to the affected side (Thomas, 2000) [12]. Diagnosis is done by eliminating other possible causes by adopting otoscopy, radiography, and computed tomography (Lourenço, 2017) [7]. The current case describes IPVD in a senior spitz dog along with the diagnostic and treatment methods adopted.

Case history and clinical observation
A 13-year-old female Spitz was presented to the small animal medicine ward, VCC, VCRI, Namakkal; with a history of head tilting (Fig.1), nystagmus & incoordination for the past 10 days, along with anorexia, frequent vomiting, and suspended defecation. All the vital parameters were within the normal range. Neurological examination revealed alert but depressed mentation; uncoordinated gait, ataxia, and circling to the right side with ipsilateral head tilt; bilateral horizontal nystagmus; with appropriate response to other cranial and spinal nerve reflexes and adequate nociceptive and proprioceptive responses. Otoscopic examination did not reveal any inflammatory, neoplastic, or polyp-like lesions at the external ear canal. Hemato-biochemical parameters were within the normal reference range. Further investigation with ultrasonography, radiography, and computed tomography, revealed no abnormality in the skull, inner ear, and abdominal organs. Therefore, the condition was diagnosed as idiopathic peripheral vestibular disease (IPVD) upon ruling out all other possible diagnoses (Table 1).

Table 1: Systematic exclusion of possible differential diagnoses (Lowrie, 2012b; Kent *et al*, 2010; Lourenço, 2017) [8, 3, 7]

S.no.	Differential diagnosis	Reason for inclusion	Reason for exclusion
1.	**Central vestibular disease**		
	Meningoencephalitis, encephalitis, intracranial neoplasia, brain ischemia, head trauma, metronidazole toxicosis, lead toxicosis	The central vestibular system is affected to different extent. Affects cranial and spinal nerves too.	Mentation was not affected. Appropriate cranial and spinal nerve reflexes and deep pain reflexes were observed. Nystagmus was horizontal. No history of drug administration.
2.	**Peripheral vestibular disease**		
a.	Otitis media and otitis interna	Damage to vestibular receptor organs in the inner ear (saccule, utricle, semicircular canals)	No ear canal lesions in otoscopic examination and diagnostic imaging
b.	Neoplasia	Middle ear or inner ear tumor Peripheral nerve tumor	No neoplastic lesions evident in diagnostic imaging
c.	Hypothyroidism	Polyneuropathy of peripheral nerves	Thyroid profile was within normal range
d.	Inflammatory polyps	Benign pharyngeal or external/middle ear masses, prevent drainage from the middle ear	No mass evident in diagnostic imaging
e.	Trauma	An acute, severe onset of signs	No history or evidence of such incident

Treatment

A symptomatic approach was adopted in the present case. An anti-vertigo drug - betahistine @ 0.2 mg/kg b.wt. twice a day was advised for twenty days along with prednisolone acetate @ 1mg/kg b.wt. bid for five days and then tapered over the next five days; and anti-emetic, ondansetron spray, ten minutes before eating, was recommended in addition. On day five of therapy, the owner saw an improvement in gait and a restoration to normal posture. The nystagmus subsided and the dog was able to move normally without experiencing any noticeable head tilt (Fig. 2). By day ten, all clinical signs had subsided and the animal had returned to normal behavior. There have been no signs of a recurrence since the patient stopped receiving treatment nine months ago.

Fig 1: Head tilt to the right on the day of presentation

Fig 2: Normal head posture after 10 days

Discussion

Idiopathic peripheral vestibular disease is observed in both cats and dogs. Clinical signs like circling, head tilting, horizontal nystagmus of the eyeball, asymmetrical ataxia, strabismus, and sometimes vomiting were recorded by Lourenço (2017) [7] in nine cases; all of which were observed in the present case. According to Kent (2010) [3], no neurological deficits are noticed since IPVD solely affects the peripheral vestibular system. IPVD is diagnosed by systematically excluding other differentials. Thomas (2000) [12] suggested that diagnosis of vestibular dysfunctions must involve a thorough neurological examination with special attention to cranial and spinal reflexes and nystagmus, followed by otoscopy, radiography, computed tomography, and MRI; along with thyroid function tests. In the present case, hematology, serum biochemistry, and thyroid profile along with otoscopic, radiographic, and CT evaluation showed no significant deviation from normal.

There is no effective treatment for IPVD, as stated by Rossmeisl (2010) [10]. According to Thomas (2000) [12], the vestibular system modulates activity in the brain stem and cerebellum to compensate for peripheral vestibular deficiency. Therefore, the prognosis is typically excellent with just short-term symptomatic and supportive treatment, such as anti-inflammatory medications, antihistaminic drugs (anti-vertigo drugs), like meclizine or betahistine, and antiemetic drugs, being advised. Turbatu (2019) [13] investigated the role of betahistine dihydrochloride in the treatment of peripheral vestibular syndrome in three clinical cases of IPVD. Betahistine dihydrochloride shares structural similarities with histamine, which affects vestibular functions in a neuro-regulatory manner. After a deficit, it turns on a vestibulo-hypothalamo-vestibular loop as an adaptive mechanism. Foth (2021) [1] reported that the 5-HT3 receptor antagonist ondansetron reduces nausea brought on by vestibular disorders. Kumar (2017) [4] successfully treated a similar case with an anti-histamine Tab. Cinnarazine @ 25mg total dose and Methyl Prednisolone @ 10mg/kg, instead of betahistine and prednisolone.

Kent (2010) [3] recorded that recovery from IPVD took over 3–4 weeks starting with the resolution of abnormal nystagmus followed by improvements in gait. In severely affected animals a residual head tilt, maybe observed. The prognosis was excellent in the present case, as the animal was back to normal gait without nystagmus within ten days and showed no residual head tilt.

Conclusion

Canine and feline Patients who exhibit various vestibular dysfunctional symptoms such as head tilt, ataxia, circling, and nystagmus should undergo a thorough neurological and otoscopic examination, followed by radiography and computed tomography to rule out any potential central vestibular or middle and inner ear disorders. Idiopathic vestibular disease is identified when the clinical signs and diagnostics results exclude other vestibular disorders. IPVD has a good prognosis if diagnosed and addressed early. Betahistine guarantees a speedy and full recovery.

References

1. Foth S, Meller S, Kenward H, Elliott J, Pelligand L, Volk HA. The use of ondansetron for the treatment of nausea in dogs with vestibular syndrome. BMC Vet Res. 2021 Jun 21;17(1):222.
2. Harrison E, Grapes NJ, Volk HA, De Decker S. Clinical reasoning in canine vestibular syndrome: Which presenting factors are important? Veterinary Record. 2021 Mar;188(6)
3. Kent M, Platt SR, Schatzberg SJ. The neurology of balance: Function and dysfunction of the vestibular system in dogs and cats. The Veterinary Journal. 2010;185(3):247-258.
4. Kumar GS, Chandrasekar M, Jeyaraja K. Successful Management of Idiopathic Vestibular Syndrome in a Dog. Intas Polivet. 2017;18(1):158-9.
5. Lahunta A de, Glass E. Veterinary neuroanatomy and clinical neurology 3rd.,pp.3-4, 30, 300, 319-321, 327, 355-357. Missouri, USA: Saunders Elsevier, 2009.
6. Lorenz MD, Coates JR, Kent M. Handbook of veterinary neurology 5th ed., pp. 39, 41-43, 254, 256, 259, 333-334, 341. Missouri, USA: Saunders Elsevier, 2011.
7. Lourenço MS. Idiopathic vestibular syndrome: methodological approach and descriptive study of nine clinical cases (Master's thesis), 2017.
8. Lowrie M. Vestibular disease: anatomy, physiology, and clinical signs. Compendium (Yardley, PA). 2012a;34(7):E1.
9. Lowrie M. Vestibular disease: diseases causing vestibular signs. Compendium (Yardley, PA). 2012b;34(7):E2.
10. Rossmeisl JH. Vestibular Disease in Dogs and Cats. Veterinary Clinics of North America: Small Animal Practice. 2010;40(1):81-100.
11. Schunk KL. Disorders of the vestibular system. Veterinary Clinics of North American Small Animal Practice. 1988;18:641-665.
12. Thomas WB. Vestibular dysfunction. The Veterinary clinics of North America. Small animal practice. 2000;30(1):227-249, viii.
13. Turbatu RM, Fernoagă C, Tudor N, Vlăgioiu C. The role of betahistine dihydrochloride in the treatment of peripheral vestibular syndrome in dogs-study of 3 cases. Medicamentul Veterinar/Veterinary Drug. 2019;13(2):43-47.