



Asteroid Hyalosis in Dog: A Case Report

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Abstract

Asteroid hyalosis is a degenerative clinical condition with unknown aetiology in dogs. An adult six-year-old female dog showed bilateral ocular discharge with multiple white spots. Clinical examination with a focal light source indicated several refractile bodies that were irregularly distributed, more towards the medial canthus of the left eye and more towards the lateral canthus of the right eye, with little or no particle movement with globe movement. B- mode ultrasonography ruled out any space occupying lesion and retinal detachment, although echogenic, spherical, or star-shaped opacities in the vitreous chamber without any posterior acoustic shadowing was observed. With the present case report, we concluded that asteroid hyalosis in dogs can arise in adult dogs and can be bilateral in the absence of any concomitant infection.

Keywords: Asteroid Hyalosis; Ophthalmic; Ultrasonography

Introduction

Asteroid hyalosis was first described by Benson in 1894, and was initially called asteroid hyalitis [6], however 70 years later the condition was renamed as asteroid hyalosis because of absence of inflammatory changes. Asteroid hyalosis is a type of vitreal degeneration characterised by the presence of numerous small refractile bodies of calcium phospholipid suspended within a relatively solid vitreous gel, which appear on ophthalmoscopy as a collection of fine refractive particles dispersed within the vitreous and remain roughly in the place during ocular movement [1]. Asteroid hyalosis occurs spontaneously in older animals but is also associated with chronic inflammatory and degenerative ocular disorders [2]. It is rarely associated with clinical visual

deficit in dogs [3,4]. but decrease visual activity secondary to asteroid hyalosis has been reported in humans [5]. The present case study describes asteroid hyalosis in both the eyes of a young dog at distinct sites and diagnosis was strengthened by B-scan ophthalmic ultrasonography.

Case Information

A six-year-old, female Labrador weighing 26 kg was presented at university referral hospital with a history of bilateral ocular discharge for one month. Vaccination and deworming status were incomplete. General clinical and detailed ophthalmic examination was performed, which included focal light source examination from distance, direct and indirect ophthalmoscopy, schirmer tear

test and tonometry. Blood sample was collected for haematological and biochemical parameters. Dilation of pupil was performed using 1% tropicamide. Ophthalmoscopy was performed in darkened room using indirect ophthalmoscope. Ocular sonography was also performed using a 7.5 MHz micro-convex probe using TOSHIBA Nemio-XG portable ultrasound machine. The dog was scanned in sitting position without sedation with fixed head towards sonographer. The transducer was placed directly on cornea after the application of coupling gel and was moved gently across the globe at different angles to visualize various intraocular and extraocular structures. After examination eyes were rinsed with saline solution and drop of natural tears were instilled.

Results and Discussion

Gross ocular examination revealed no opacity, inflammation, pigmentation, and ulceration of cornea. Ophthalmic examination revealed normal palpebral, pupillary light reflex and positive menace response in both eyes. Normal mucous membrane and rectal temperature (102°F) was recorded. Ophthalmoscopic examination using focal light showed fine shiny numerous particles within vitreous humour which do not move with the movement of head or with gravity. These were several refractile bodies that were distributed irregularly. Position of these bodies was distinct in both eyes with more towards the medial canthus in left eye and more towards the lateral canthus in the right eye (Figure 1 and 2).

Intraocular pressure was measured by penside Tonometer (Reichert®) and was found to be 14 mm Hg in the right eye and 17mm Hg in the left eye. Schirmer tear test values were 25mm in both eyes. Haematological and biochemical parameters were within the normal range with thrombocytopenia and anaemia as described in table 1. On blood smear examination dog was negative for any hemoprotozoan infection.

Many highly reflective, echogenicities are evenly distributed in the vitreous with mobile echodensities in real time ultrasound examination (Figure 3). Lens was properly placed with clear aqueous body and without any space occupying lesion.

Based on above findings the condition was diagnosed as Asteroid Hyalosis without any concurrent ocular disorder.

Dogs was treated with Eye drop Flurbiprofen sodium three times a day and combination of naphazoline, chlorpheniramine maleate

with methylcellulose two times a day for 7 days and multivitamin syrup for 10 days. There was no much clinical improvement observed after ten days with normal vision of the dog. In dogs there are two vitral abnormalities reported mainly asteroid hyalosis and synchysis scintillans. Both are difficult to differentiate on clinical presentation as both are characterized by appearance of small refractile particles scattered in the vitreous humour with no effect on vision [8]. In the present case also, the vision was normal and it may be because the density of asteroid bodies in the vitreous cavity is relatively low [9] and concentration of asteroid bodies is more towards the lateral or medial canthus of eye, therefore not affecting the light to pass though pupil and forming relatively a clear image. In the present case asteroid bodies do not move with the movement of head and appeared to be fixed in the vitreous because of collagen framework [8]. In humans Asteroid Hyalosis is associated with several systemic diseases although exact aetiology is unknown. Most of the studies suggested this condition to be primarily unilateral and associated with ageing in humans [10] but in the present case report the dog is adult and asteroid bodies were present in both the eyes differing from the earlier known facts. This difference may be because of species difference and detailed pathogenesis may be studied in dogs for better understanding.



Figure 1: Asteroid hyalosis in the Left eye of the dog with pigments towards medial canthus of the eye.



Figure 2: Asteroid hyalosis in the right eye of the dog with pigments towards lateral canthus of the eye.



Figure 3: Ophthalmic ultrasonography of eye with normal lens and no space occupying lesion.

S.no.	Parameters	Values	Standard range*
1.	Haemoglobin (g/dl)	9.6	11.9-18.9
2.	Packed cell volume (%)	28	35-57
3.	Total leukocyte count (10 ³ /μL)	8.08	5.0-14.1
4.	Platelet (×10 ³ /μL)	63	211-621
5.	BUN (mg/dl)	14.3	8-28
6.	Creatinine (mg/dl)	0.63	0.5-1.7
7.	Total protein (gm/dl)	9.09	5.7-7.5
8.	Albumin (gm/dl)	1.24	2.3-3.1
9.	ALT (U/L)	13	10-109

Table 1: Haematological and biochemical parameters.

*Standard range taken from Merck manual.

Conclusion

Ophthalmic ultrasonography ruled out any space occupying lesions with no concurrent infection pointing out unknown aetiology of Asteriod Hyaolosis. More detailed studies will certainly provide an insight about the pathogenesis of Asteriod Hyaolosis for better prevention and management in pet dogs.

Conflict of Interest

None.

Ethical Statement

As this is a clinical case, ethical permission is not required.

Author's Contributions

TK, P: Diagnosis and Treatment of the case; SG: Performed tests and drafted article; AK: Interpretation of data and finalised drafted article.

Bibliography

1. Barnett KC., *et al.* Vitreous. In: "Canine ophthalmology: an atlas and text". London: W.B. Saunders (2001): 2151.
2. Mitchell P., *et al.* "Asteroid hyalosis in an older population: the Blue mountains eye study". *Ophthalmic Epidemiology* 10 (2000): 331-335.
3. Boeve MH and Stades FC. "Diseases and surgery of the canine vitreous. In: Gelatt KN (ed): *Veterinary ophthalmology*". Gainesville: Blackwell Publishing 2 (2007): 939-944.
4. Williams J and Wilkie DA. "Ultrasonography of the eye". *Compendium on Continuing Education for The Practicing Veterinarian* 18 (1996): 667-677.
5. Leon A. "Diseases of the vitreous in the dog and the cat". *Journal of Small Animal Practice* 29 (1988): 448-461.
6. Belhassan S and Daoudi R. "Low visual acuity and asteroid hyalosis". *The Pan African Medical Journal* 18 (2014): 247.
7. Benson A. "Diseases of the vitreous: a case of monocular asteroid hyalitis". *Transactions of the Ophthalmological Societies* 14 (1894): 101-104.
8. David JM., *et al.* "Slatter's Fundamentals of Veterinary Ophthalmology". Saunders (2013): 295-296.
9. Noda S., *et al.* "Patients with asteroid hyalosis and visible floaters". *Japanese Journal of Ophthalmology* 37.4 (1993): 452-455.
10. Kador P and Wyman M. "Asteroid hyalosis: pathogenesis and prospects for prevention". *Eye* 22 (2008): 1278-1285.