APMB - Atti della Accademia Peloritana dei Pericolanti
Classe di Scienze Medico Biologiche
Vol. 105(2) 2017

ISSN 1828-6550

DOI: 10.6092 / 1828-6550 / APMB.105.2.2017.A8

Clinical Case Seminar A8(1-4)

Glaucoma and lens subluxation in a crossbred Puli X Pumi dog: a case report

Monica Ragusa[1a], Michela Pugliese[1b], Domenico Britti[2], Ernesto Palma[2,] Antonio Pugliese [1b]

[1a]Scuola di Specializzazione "Fisiopatologia della Riproduzione degli Animali Domestici", [1b]Dipartimento di Scienze Veterinarie - Università degli Studi di Messina, [2]Dipartimento di Scienze della Salute, Università Magna Graecia di Catanzaro

Abstract

The Pumi is a rare sheep-herding terrier breed dog selected in Hungary from the Puli breed mixed with French and German herding dogs since the 17th century. The current case report described a 9.5 years old, cross-breed Puli/Pumi, male dog with clinical signs of glaucoma and intraocular inflammation accompanied by lens subluxation and no abnormal gonioscopic findings in the left eye. At the presentation, the dog appeared painful and blind in the left eye. Diagnose of glaucoma was made at the ophthalmological examination. Furthermore, glaucoma was suspected to be caused by a primary subluxation and vitreous debris. An intensive medical treatment was performed without considerable improve of eye condition, and disruption of ciliary body was finally performed through gentamicin injection.

One week after surgery, there was a severe reduction of IOP in the left eye from the preoperative value of 50 mmHg to 9 mmHg. Persistent intraocular inflammation justified postoperative treatment with topical corticoids. So far there are no published reports of inherited ocular conditions in Pumi and in this crossbreed and/or the numbers of individuals for which examinations are recorded are too low to identify the presence of significant ocular disorders. Examinations are encouraged to accumulate information and reduce the likelihood of undetected conditions becoming problematic.

KEYWORDS: glaucoma, lens, subluxation, Pumi, dog

Introducing Member: Antonio Pugliese

Corresponding Author: Monica Ragusa, m.ragusa@hotmail.com

Introduction

Subluxation and luxation of lens are dislocations from its normal position within the patellar fossa, related to abnormal development, rupture, degeneration, tearing. Lens dislocation has been classified most commonly as congenital, primary, secondary, and traumatic.[1,2]

Primary lens luxation (PLL) has been identified in a variety of terrier breeds, terrier crosses, Tibetan Terrier and Shar Pei.[1-11] Ortopedic Foundation of Animals has statistics for results of the testing they have done, and some additional breeds need to be added to this list, among them the Pumi (20.9% carrier).[1]

The Pumi, or Hungarian Pumi, is a rare herding dog originated in Hungary by crossbreeding the primitive Puli with Terrier dogs.[13]

ISSN 1828-6550
DOI: 10.6092 / 1828-6550 / APMB.105.2.2017.A8

Case Report

A 9-years-old crossbred Puli x Pumi male dog was referred to Veterinary Teaching Hospital-University of Messina for painful and blind left eye (OS).

Ocular blunt trauma was excluded by the owner.

Vision assessment and neuro-ophthalmic examination were normal in OD. Menace reaction, dazzle and pupillary light reflexes were absent in OS. Vision was maintained only in OD. Schirmer Tear Tests were 20mm/min(OS) and 17mm/min(OD). Examination of the left eye showed blepharospasm, epiphora, episcleral engorgement, diffuse endothelial corneal edema, midriasis, dorsal aphakic crescent and prolapsed vitreous in the anterior chamber. Intra-ocular pressure measured with TonopenVet was 63mmHg in OS and 18mmHg in OD. Fluorescein dye test was negative (OU). Ultrasound imaging confirmed the lens subluxation in OS . No abnormal gonioscopic findings were revealed, iridocorneal angle was not evaluable for corneal edema.

In this case report, lens subluxation and mechanical obstruction of aqueous outflow by vitreal debris had caused glaucoma.

Acetazolamide 5mg/kg/OS, associated to Dorzolamide and Timol maleate eye drops , and solution containing mannitol,glycerol, EDTA, clorobutanol andhyaluronic acid was performed three times a day for a week, without acceptable improvement of eye condition. Then, Pilocarpine was added for 4 months.

Due to his pain and poor visual prognosis, disruption of ciliary body was performed by intravitreal injection Gentamicin sulfate and Dexamethasone after aspiration of 0.5-0.6 ml of humor aqueous.

An anti-inflammatory dose of prednisone and topical treatment with brinzolamide and dexamethasone once a day and tobramicine was used in postoperative period (for 2 weeks). At the follow-up, after a week the clinical condition of OS was improved and IOP was decreased (9mmHg).

Discussion.

In this case report glaucoma is suspected to be caused by mechanical obstruction of aqueous outflow by vitreal debris.

PLL results from a single base change mutation into the gene ADAMST17 in different breeds.[14]

However the coexistence of increased intraocular pressure, subluxation of the lens, and an apparent normal globe size in some dogs on initial clinical presentation sometimes makes determination of the primary or antecedent disease difficult.

The main purpose of the treatment of canine glaucoma is the maintenance of vision and IOP within normal range, and the prevention of further damage to the optic nerve and retina.

Because of the limited success of both medical and surgical therapies for advanced and blind canine glaucomatous eyes, salvage procedures to prevent ocular pain, to reduce enlarged and blind globe to near-normal size to reduce corneal exposure, and to provide a cosmetically

ISSN 1828-6550
DOI: 10.6092 / 1828-6550 / APMB.105.2.2017.A8

acceptable eye may be necessary. These procedures include pharmacologic ciliary body ablation (CBA) via injection of a cytotoxic drug in vitreous chamber; intrascleral or intraocular prosthesis; and enucleation.[15]

Gentamicin is cytotoxic for ciliary body epithelium and retina, thereby markedly reducing or even eliminating aqueous humor formation.

This technique was successful in lowering the IOP in 65% of patients for treatment of absolute and blind glaucomatous eyes. Approximately 10% of the eyes will be phtisical after this method.[16,17,18]

However, if cost is not a limitation, the preference is for evisceration and intrascleral prosthesis or for enucleation, because a recent study showed a 39.5% likelihood of post-CBA intraocular tumor formation in dogs.[19]

It is recommended to check frequently the contralateral eye.

Furthermore, it is important to check also the affected eye for an eventual ocular tumors following ciliary body ablation with intravitreal gentamicin.[19]

Up until seventy years ago, Pumi and Puli were considered the same breed, then they were separated, each being defined by a well-distinguished standard. Pumi has been recognised as an independent breed at the beginning of the 20 th century.[13]

So far there are no published reports of inherited ocular conditions in Pumi and in this crossbreed and/or the numbers of individuals for which examinations are recorded are too low to identify the presence of significant ocular disorders. Examinations are encouraged to accumulate information and reduce the likelihood of undetected conditions becoming problematic.

Conflicts of Interest: There is no potential conflict of interest, and the authors have nothing to disclose. This work was not supported by any grant.

References

1. Curtis, R. (1990) Lens luxation in the dog and cat. Vet Clin *North Am Small Anim Pract*, 20(3), 755-753.
2. Curtis, R., Barnett, K.C. (1980): Primary lens luxation in the dog. J Small Anim Pract, 21, 657–668.
3. Babizhayev, M.A., Deyev, A.I, Yermakova, V.N., Brikman, I.V., Bours, J. (2004) Lipid peroxication and cataracts: N-acetylcarnosine as a therapeutic tool to manage age related cataracts in human and in canine eyes. Drugs R D, 5(3), 125-139.
4. Chandler, E.A. (1970) Lens luxation in the Webster terrier. Vet Rec, 86(5), 145-146.
5. Curtis, R., (1983a) Aetiopathological aspect of inherited lens dislocationin theTibetan Terrier. *J* Comp Pathol, 93(1), 151-163.
6. Curtis, R.,(1983b) The suspensory apparatus of the canine lens. J Anat, 136 (Pt1), 69-83.
7. Lazarus, J.A., Peckett, J., Champagne, E.S. (1998) Primary lens luxation in the Chinese Shar Pei: clinical and hereditary characteristics. Vet Ophthalmol, 1(23), 101-107.
8. Ketteritzsch, K., Hammann, H., Brahm, R., Grussendorf, H., Rosenhagen, C.U., Distl, O. (2004) Genetic analysis of presumed inherited eyediseases in Tibetan Terriers. Vet J 168 (2), 151-159.

ISSN 1828-6550

DOI: 10.6092 / 1828-6550 / APMB.105.2.2017.A8

9. Martin, C.L.,(1978) Zonular defects in the dog: aclinical and scanning electron microscopic study. J Am Anim Hosp Assoc, 14, 571-579.
10.Sargan, D.R., Withers, D., Pettitt L., Squire M., Gould D.J., Mellersh C.S. (2007) Mapping the mutation causing lens luxation in several terrier breeds. J Hered, 98(5), 534-538.
11.Oberbauer, A.M., Hollingsworth, S.R., Belanger, J.M., Regan, K.R., Famula T.R. (2008) Inheritance of cataracts and primary lens luxation in Jack Russel Terriers. Am J Vet Res, 69(2), 222-227.
12.Orthopedic Foundation for Animals (2017) http://www.offa.org/stats_dna.html?dnatest=PLL
13.Ente Nazionale Cinofilia Italiana Libro Genealogico delle Razze (PUMI)FCI Standard N° 56 / 13.09.2000
14.Fariar, F.H., Johnson, G.S., et al. (2010) An ADAMTS 17 splice donor site mutation in dogs with primary lens luxation. Invest Ophthalmol Vis Sci, 51 (9), 4716-4721.
15.Welihozkiy A.,(2017) Enucleation & pharmacologic ciliary body ablation of the eye . Procedures ophthalmology peer reviewed. cliniciansbrief.com july 2017, 33-42
16.Plummer, C.E., Regnier, A., Gelatt K.N.(2013) The canine glaucomas. In: Veterinary Ophthalmology (ed. Gelatt, K.N.) 5th ed., pp. 1051-1145. Ames, IA: John Wiley & Sons, Inc.
17.Rankin AJ, Lanuza R, KuKanich B, Crumley, W.C., Pucket, J.D., Allbaugh, R.A., Meekins, J.M. (2016) Measurement of plasma gentamicin concentrations postchemical ciliary body ablation in dogs with chronic glaucoma. Vet Ophthalmol. 19(1):57-62.
18.Spiess BM, Pot SA. (2013) Diseases and surgery of the canine orbit. In: Gelatt KN, Gilger BC, Kern TJ, eds. Vet Ophthalmol 5th ed. Ames, IA: Wiley-Blackwell;793-831.
19.Duke, F.D., Strong, T.D., Bentley, E., Dubielzig, R.R.. (2013) Canine ocular tumors following ciliary body ablation with intravitreal gentamicin. Vet Ophthalmol.16(2):159-62.

Communicated and received November 15, Revised November 22, published on line December 20, 2017