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2018
Antinol®
**Cat Case
Study Contest**

03



**USE OF PCSO-524® FOR CONTROL
OF INFLAMMATION CAUSED
BY IRIS TUMOR AND UVEITIS
IN CATS WITH LYMPHOMA
AND CHRONIC KIDNEY DISEASE**

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Abstract

A neutered male Domestic Shorthair cat aged 8 years was infected with FIV and diagnosed with nasal submucosa-T-cell lymphoma that was positive to CD3. After the chemotherapy, the cat showed improvement of respiration. However, azotemia and leukopenia were detected, so the therapy was discontinued after the second session. Leukopenia and high creatinine were treated until the normal conditions were resumed. Four months later, tumor of iris and uveitis were found in the left eye. Treatment of inflammation of the left eye included prednisolone acetate 1% eye drop (Inf-oph[®] 1 %, Seng Thai company; Thailand) qid, doxycycline (Siadocin[®], Siam Bheasach; Thailand) PO at the dose 10 mg/kg/day, prednisolone (Prednisolone GPO; Thailand) PO 0.36 mg/kg bid. Two weeks later, the size of tumor remained constant, the inflammation degree was reduced but creatinine level was increased. Administration of oral prednisolone, not the eye drop, was then terminated. Uveitis of the right eye was diagnosed and also fibrin in the anterior chamber and tumor of the iris were found in the right eye. Prednisolone acetate 1% eye drop was prescribed for both eyes. The inflammation of both eyes still existed after 1 month of the prednisolone treatment. Green Lipped mussel extract, PCSO-524[®](VetzPetzAntinol[®], DKSH, Thailand), 1 capsule per day was then prescribed as an alternative of steroidal medication for control of inflammation, together with the prednisolone acetate 1 % eye drop in both eyes. After 30 days of the start of PCSO-524[®] treatment, the tumor of iris disappeared and the severity of uveitis was reduced in both eyes.

Keywords:

Cat, uveitis, lymphoma, azotemia, PCSO-524[®]

Introduction

Uveitis is an inflammation of iris, ciliary body or choroid. Approximately 70% of uveitis in cats is caused by bacterial infection, such as Bartonella spp., viral infection, such as FIP, FIV, and FeLV, protozoa infection, such as Toxoplasma gondii, fungal infection, such as Cryptococcus, Blastomyces, Aspergillus and Histoplasmosis. Other causes include inflammation of lens, corneal laceration, traumatic, neoplastic causes, etc.(1). Uveitis may result in pain, blepharospasm, photophobia, aqueous flare, swollen or dull appearance of the iris and inflammation, keratic precipitates, hypopyon, and hyphema. Uveitis consequently leads to loss of vision, glaucoma, cataract, and retinal detachment or degeneration (2).

Diagnostic examination of uveitis usually consists of physical and ophthalmological examination, history taking, assessment of anterior chamber, intraocular pressure measurement, and examination of the retina. Collection of aqueous humor using anterior centesis for cytological and PCR examination can be done for evaluation of uveitis (3, 6).

Metastasis of lymphoma to the eyes is common. When uveitis is found under this condition, chemotherapy in concurrent with systemic anti-inflammatory drugs and administration of eye drop such as corticosteroid or non-steroids, and prevention undesirable sequelae such as synechiae formation, secondary glaucoma with mydriatic and cycloplegics drugs and antiglaucoma drugs (3).

This case report focuses on the effect of using anti-inflammatory eye drop and PCSO-524[®] (VetzPetzAntinol[®], DKSH, Thailand) concurrently. PCSO-524[®] is Green-lipped mussel extract that contains essential fatty acid of which the main ingredient is omega-3, substance that is effective against inflammation (4). It was found in this study that PCSO-524[®] was able to reduce the severity of inflammation of the anterior chamber while systemic corticosteroid or non-steroid medication was omitted. The treatment had no adverse effects on the cat's well-being in general.

Case history

A neutered male Domestic Shorthair cat aged 8 years and weighed 3.4 kg was infected with FIV and also diagnosed with chronic rhinitis. Tumor was found at the left nasal pharynx. Pathological examination found nasal submucosa-T-cell lymphoma that was positive to CD3. Chemotherapy, consisting of vincristine, cyclophosphamide (COP) and prednisolone, was administered weekly for 2 weeks. After the treatment, leukopenia and azotemia were detected and then treated at the animal hospital, Faculty of Veterinary Medicine, Bang Khen campus. It took 4 months of treatment until the white blood cell count and creatinine resumed normal level. During the treatment, the cat showed sign of depression and loss of appetite, but no nasal discharge. The cat developed disorders of left anterior chamber including iris edema and uveitis and then was submitted to eye department of the animal hospital at the Faculty of Veterinary Medicine, Bang Khen campus.

Physical examination

Physical examination found normal respiration, no nasal discharge, normal lung and heart sound, no enlargement of lymph node, loss of appetite and depression, body condition score 2.5/5, narrow left eye, tumor of left iris, fibrin in left anterior chamber, and normal right eye.

Diagnosis plan and results

Table 1. Hematological test results

Hematology	Treatment time						Normal range
	Day 0	2 weeks	2 months	3 months	4 months	5 months	
HGB	5.71	6.05	9.6	9.83	10.9	9.62	10-15 gm%
PCV	17.7	18.7	30.3	31.2	32.7	30	30-45%
RBC	4.4	4.59	9.66	10.4	11.5	10.3	5- 10 x10 ⁶ /mm ³
WBC	5.37	6.4	7.0	4.99	4.24	4.72	5.5-19.5 x10 ³ /mm ³
SEGS	95	81	78	76	NA	74	45-64%
LYMPH	4	10	10	15	NA	22	1.5- 7.0%
MONO	1	6	9	4	NA	3	0-5%
EOS		3	3	5	NA	1.0	0-4%
PLATELETS	141	210	1491	440	600	480	300-800 x10 ³ /ul
PROTEIN	7.0	7.4	7	7.4	7.2	6.4	6-7.5 gm%
BUN	33	43	45	55	48	66	15-34 mg%
CREATINE	1.99	2.61	2.55	3.03	3.16	4.26	1.0-2.2 mg%
ALT			24	27	3.4		28-76 IU/L
TP				7.4			5.8-7.8 gm%
ALBUMIN		3.2	3.2	3.4	3.4		2.6-4.2 gm%
PHOS	3.8	6.0	4.8	5.6	6.3	5.1	2.5-5.0 mg%
RETICS		0.0					1-5 %

NA: Not available

Table 2. Results of eye examination

Parameter	Day 0		2 weeks		1 month		2 month		3 month		4 month		5 month	
	OD	OS	OD	OS	OD	OS	OD	OS	OD	OS	OD	OS	OD	OS
IOP (mmHg)	16	9	17	18	13	10	13	12	12	14	13	13	16	16
Fluorescein	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Menace	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Dazzle	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLR	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Aqueous flare	-	++	-	+	-	+	+	+	++	++	++	+	-	-
Fibrin	-	++	-	-	-	-	-	-	++	-	++	-	+	-
Iris mass	-	++	-	++	-	++	-	+	++	-	++	-	-	-
Rubeosis iridis	-	+	-	+	-	+	+	+	++	+	+	+	-	-
Keratic precipitate	-	-	-	-	-	-	-	-	++	+	+	+	+	-
Fundus	N	N	N	N	N	N	N	N	N	N	N	N	N	N

OD: right eye, OS: left eye, IOP: intraocular pressure, PLR:pupillary light reflex, Fibrin: fibrin in anterior chamber, N: normal

Treatment and outcome

The eye examination found normal right eye and that the left eye was narrow and showed tumor of the iris, aqueous flare, low ocular pressure and anterior uveitis (Table 2). Ultrasonic image identified tumor of left iris (Figure 1). Anterior centesis of the left eye was not performed since the owner did not allow anesthesia. The owner decided to discontinue the chemotherapy, therefore, supportive therapy was recommended. The treatment of left eye included prednisolone acetate 1% eye drop qid, doxycycline PO at the dose 10mg/kg/day, prednisolone PO dose 0.36 mg/kg bid, immune enhancer (Immuplex Bgold®) ½ tab/day, feline interferon omega (Virbagen® omega). 10⁴ U sid, hematonic (Ferric plus-K®) 1.5ml/day. Treatment for azotemia consisted of subcutaneous administration of electrolyte 150-200 ml/day and erythropoietin injection every other day. The monitoring during the following 2 weeks found edema of iris but no fibrin in the anterior chamber. The owner made a request that only the eye could be treated and the monthly monitoring was scheduled. One month later, it was found that the size of left eye tumor was decreased but the degree of uveitis of the right eye was more severe. Prednisolone acetate 1% eye drop was used bid. Three months later, uveitis, fibrin in the anterior and corneal ulcer were detected in the right eye (Figure 3).

So the eye drop was discontinued and replaced with doxycycline 10 mg/kg sid, oxytetracycline hydrochloride ointment (Terramycin®) tid, and artificial tear (Hialid®0.1%) qid for 1 week. After the treatment, the corneal ulcer was resolved but the iris edema and fibrin in the anterior chamber of the left eye still remained, in addition to the occurrence of mild keratic precipitates (figure 4). Prednisolone acetate 1% eye drop was administered qid to the right eye, and bid in the left eye. Oral administration of PCSO-524®1 capsule per day for 1 month was prescribed for systemic treatment of inflammation. The follow-up monitoring did not find tumor of the right iris and inflammation of the left iris but keratic precipitates of the right eye persisted (Figure 5). The cat was loss to follow-up since then.

Discussion

Uveitis in cat caused by metastatic intraocular tumor or intraocular tumor usually shows symptoms of iris hyperpigmentation, intraocular fibrin exudation and hemorrhage (5). The diagnosis can be obtained by anterior centesis of the aqueous humor for cytological or PCR examination. The etiology of uveitis is not limited to the eye problems but can be disorders of the other systems (6). Since the anesthesia was not permitted, the sample collection for diagnosis was not performed. The most common metastatic intraocular tumor in dogs and cats is lymphoma and the most common intraocular tumor is melanoma (7). Uveitis caused by lymphoma usually occurs as anterior uveitis with subacute inflammation, hypopyon or hyphema, aqueous flare, iridal thickening, iridal nodules, rubeosis iridis, and iris bombe that may lead to secondary glaucoma (1).

Uveitis treatment requires elimination of the cause, for example, chemotherapy of the lymphoma and radiotherapy of the nasal lymphoma. Regular hematological test must be scheduled during the therapy for evaluation of the treatment outcome and the uveitis treatment is needed concurrently (8). Control of inflammation can be done by administration of eye drops that are corticosteroid or nonsteroid anti-inflammatory drugs. The corticosteroid drugs are usually more effective than nonsteroidal anti-inflammatory drugs. Systemic anti-inflammatory medication is also necessary for control of pain and inflammation with using eye drop for anti-inflammation (3). Iris synechia that may lead to secondary glaucoma can be prevented by using pupillary dilation medication.

Since the cat was also having kidney failure, systemic anti-inflammatory drug was not prescribed. Anti-inflammatory drugs, either corticosteroid or nonsteroid agents can prohibit the function of cyclooxygenase (COX), the enzyme that maintains electrolyte and pH balance, blood circulation through kidney, and glomerular filtration for sodium and water at the kidney. Anti-inflammatory drugs therefore can be harmful for the kidney in this case. PCSO-524® contains essential fatty acid consisting of omega-3 that is effective for inflammation control by inhibiting COX and lipoxygenase (LOX) mechanism. It is reported that the extract can prohibit the migration of neutrophils and relieve pain and edema in chronic hip dysplasia animals and can be used for long-term treatment without side effects (9). PCSO-524® consists of ETA, EPA, and DHA, which are known to have anti-inflammatory, gastroprotective, antihistamine, antioxidant, anticytokines and antiarthritis effects (10, 11). Daily single dose of PCSO-524® for 30 consecutive days in concurrent with anti-inflammatory eye drop therefore is an alternative choice for control of pain and inflammation caused by uveitis in cats compared with anti-inflammatory eye drop alone.

Conclusion

Uveitis treatment requires elimination of the cause and control of inflammation by using eye drop and systemic medication. The cause of uveitis in this cat was unknown since anterior centesis, essential for identification of the cause, was not permitted. Anti-inflammatory eye drop alone was not as effective as using the eye drop in concurrent with systemic anti-inflammatory medication. Steroid and non-steroid drugs were not appropriate in this case due to azotemia of the cat. Daily single dose of PCSO-524® for 30 consecutive days resulted in decreased degree of inflammation and resolved intraocular tumor. Effects of PCSO-524® for uveitis treatment is satisfied in this case, even though the etiology is unknown. As extracted from natural material that has no adverse effects on the kidney, PCSO-524® is an interesting alternative for uveitis treatment.

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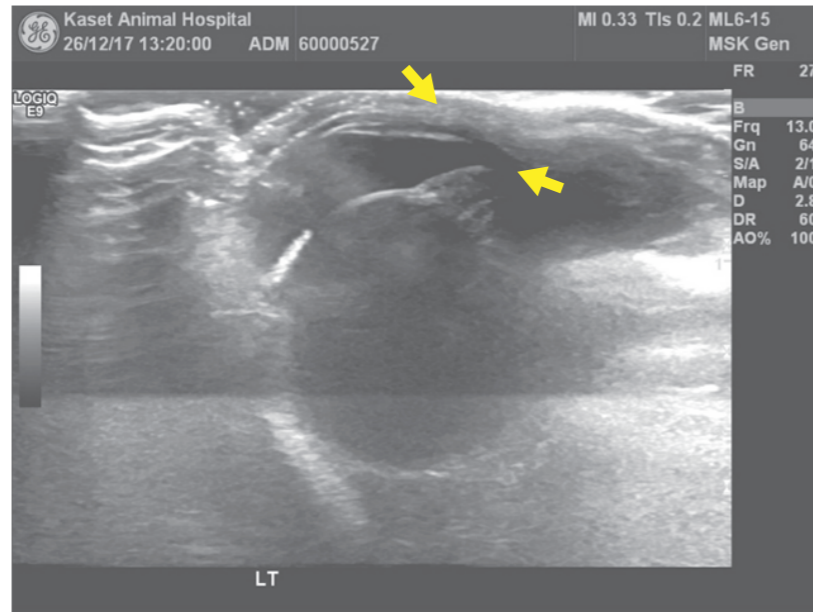


Figure 1. Ultrasound image of the left eye shows tumors at the iris area (arrows)



Figure 2. The left eye after treatment with prednisolone acetate 1% eye drop and oral prednisolone for 2 weeks with intraocular tumor at 1-5 o'clock of the iris

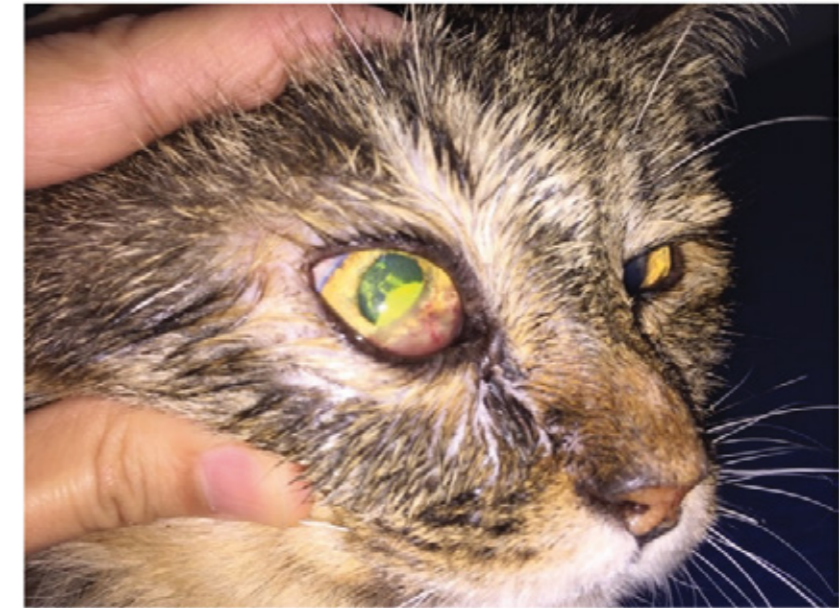


Figure 3. Photo taken at the 3rd month of the treatment showing anterior chamber fibrin, uveitis and corneal ulcer of the right eye



Figure 4. Photo taken at the 4th month of the treatment showing iris edema and anterior chamber fibrin of the right eye and mild keratic precipitates of the left eye



Figure 5. Photo taken at the 5th month of the treatment and 30 days after daily administration of PCSO-524[®] showing disappearance of intraocular tumor and mild keratic precipitates of the right eye

References

1. Davidson MG, Nasisse MP, English RV, Wilcock BP, Jamieson VE. Feline anterior uveitis: A study of 53 cases. *J Am Anim Hosp Assoc.* 1991;22:77–83.
2. David Maggs, Feline uveitis: An intraocular lymphadenopathy. *JFMS.* 2009 ;11:167- 182.
3. Itamar A, Ron O and Gila A. *Slatter's Fundamentals of Veterinary Ophthalmology* 5th edition .2013: 221-436.
4. Whitehouse MW, Macrides TA, Kalafatis N, Bettis WH, Haynes DR and Broadbent J 1997. Anti-inflammatory activity of a lipid fraction (Lyprinol) from the NZ green-lipped mussel. *Inflammo Pharmacology.* 5(3): 237-246.
5. Peiffer RL. Ciliary body epithelial tumors in the dog and cat: a report of 13 cases. *J Small Anim Pract.* 1988; 24:347–70.
6. Aree Tayananut. *Eye Diseases in Dogs and Cats.* 2017: 143-160
7. Wendy M., Townsend., *Canine and Feline Uveitis.* *Vet Clin Small Anim* 38 .2008: 323–346
8. Christine Malinowski., *Canine and Feline Nasal Neoplasia.* *Clin Tech Small Anim Pract.* 2006; 21: 89-94.
9. Marek Z., Claudia J and Jacek S., *Perna canaliculus Lipid Complex PCSO-524™ Demonstrated Pain Relief for Osteoarthritis Patients Benchmarked against Fish Oil, a Randomized Trial, without Placebo Control Marine Drugs.* 2013;11(6): 1920-35.
10. Coulson S, Palacios T and Vitetta L. *Perna Canaliculus (Green-lipped mussel): Bioactive components and therapeutic evaluation for chronic health condition.* *Prog drug res.* 2015; 70:91-132.
11. Coulson S, Butt H, Vecchio P, Gramotnev H, Vitetta L. *Green-lipped mussel extract (Perna canaliculus) and glucosamine sulphate in patients with knee osteoarthritis: therapeutic efficacy and effect on gastrointestinal microbiota profiles.* *Inflammopharmacology.* 2013;21(1):79-90.



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Pharmalink and Vetz Petz® would like to thank everyone involved with the Antinol® research competition

At Pharmalink and Vetz Petz® we have a passion for Scientific Research and know that only this type of scientific proof is good enough to prove the benefits of ANTINOL® to the Veterinary community and owners alike. We also share the Vets passion for providing the best care for companion animals. This level of care and the credibility that goes with a Veterinarians recommendation cannot be achieved in good conscience if we do not have the participation and co-operation of the scientific community and Veterinarians alike. So we will continue to provide funding for projects that help companion animal owners and their Veterinarians to provide the best care for our beloved companion friends.

We would also like to offer a special thanks to ALL the committee members, Dr. Achinee and DKSH for their hard work organizing and hosting this very and unique event. You have graciously PROVIDED your time and vast experience and for that we thank you VERY much.

This project is the first of its kind for Pharmalink and Vetz Petz® and we are very excited about the research opportunities that have been shown as result of this competition. The future of Antinol® research is very bright and we are very thankful to everyone in loved.

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Antinol® Contest has been organized successfully for 3 years since 2016 in Thailand. The key objective of this scientific contest is to encourage knowledges sharing amongst the Vet practitioners on how to treat the companion animals inflammatory cases safely & effectively by using Antinol® in conjunctive with others medicines especially the NSAIDs (Non Steroidal anti-inflammation drugs) which is the drug of choices of anti-inflammatory problems. However as we know apart from the high efficacy of NSAIDs it also can cause serious side effects such as renal or liver damage if it's used too long or no close monitoring when applied in animals.

Recently we have seen the increasing trend of cats populations adopted as the companions ; Cat is the specie that has quite limited type of anti-inflammatory drug with safely applied. Therefore 2018 Antinol contest would like to promote the Vet practitioners to share their knowledges and experiences of using Antinol® as the drug of choices of anti-inflammatory cases in cats to demonstrate the option of safe and effective treatment which has been very successful applied as the combined therapy from different cases study in this contest resulted Antinol® is become commonly used as the safe choice of anti-inflammation in cats.

Dr. Achinee Runcharoen
DVM
CEO ASIA



2018 Antinol[®] Cat Case Study Contest

