

## Iatrogenic Hyperlipidemia Associated with Lipid-Laden Aqueous Humor in a Cat Following Administration of Megestrol Acetate

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**Abstract:** A 2-year-old male cat presented with sudden onset of binocular blindness in both eyes. The appearance of eyes seemed to change to cloudy white. Evaluation of intraocular components of the anterior segment was completely impossible due to the presence of homogeneous discoloration of the affected eyes. Careful history taking revealed that the cat had received megestrol acetate prescribed by the referring veterinarian for the treatment of urine spraying for 10 months. Laboratory findings revealed hypertriglyceridemia and hypercholesterolemia. According to the history of drug therapy, ocular signs, and laboratory findings, a diagnosis of drug induced lipemia and subsequent lipid-laden aqueous humor was considered. Discontinuation of the drug therapy in association with low fat diet resulted in the resolution of these abnormalities. In view of widespread use of progestational drugs by veterinary surgeons, the aim of this report is to contribute to increased awareness among veterinary practitioners regarding the ocular complications following megestrol acetate administration.

**Key Words:** Hyperlipidemia, cat, lipid-laden aqueous humor, megestrol acetate

### Introduction

The most frequent type of behavior problem in cats for which veterinary consultation is sought is problem urination (1). Progestational agents, such as megestrol acetate and medroxyprogesterone acetate, are widely used for treatment of urine spraying and marking in cats (2). Despite the common use of progestational drugs, several side effects have been described following administration of these compounds including polyuria, polydipsia, polyphagia, obesity, reproduction abnormalities, neoplasia, diabetes mellitus, and hyperlipidemia (3,4). The present report describes clinical and ocular findings in a cat that developed hyperlipidemia following long term administration of megestrol acetate.

### Case history

A 2-year-old male cat presented with sudden onset of binocular blindness in both eyes. The appearance of eyes seemed to change to cloudy white (Figure 1). Careful history taking revealed that the cat had been receiving megestrol acetate prescribed by the referring veterinarian

for the treatment of urine spraying for 10 months. The client reported that the cat showed polyphagia in association with polyuria and polydipsia. The owner noted significant weight gain during the course of drug administration.

Complete ophthalmic examination included clinical observation, Schirmer tear test, fluorescein stain, and intraocular pressure measurement. There was no obvious change in size and conformation of both eyes. The surface of cornea was clear and there was no evidence of vascularization, pigmentation, or ulceration during routine examination of both eyes under illumination of penlight. Observation and evaluation of intraocular components of anterior segment such as anterior chamber and iris was completely impossible due to the presence of homogeneous cloudy white discoloration of the affected eyes.

### Results and Discussion

Fluorescein stain test was negative for identification of erosive or ulcerative corneal lesions. Schirmer tear test

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Figure 1. Lipid-laden aqueous humor resulted in sudden onset of cloudy-white appearance in the presented cat.



Figure 2. The photograph shows resolution of ocular signs. Intraocular components are clearly visible.

showed normal values (17 mm/minute, reference range  $16.9 \pm 5.7$  mm/minute). Intraocular pressures were 17 and 22 mm Hg in the left and right eyes, respectively. Complete blood count, serum biochemical profile, and thyroid function tests were performed. Abnormalities included marked fasting hypertriglyceridemia (320 mg/dl [normal value  $< 60$  mg/dl]), hypercholesterolemia (198 mg/dl [normal value 74-151 mg/dl]) and mild hyperglycemia (197 mg/dl [normal value 75-160 mg/dl]).

According to the history of drug therapy, ocular signs and laboratory findings, a diagnosis of drug induced lipemia and subsequent lipid-laden aqueous humor was considered. Megestrol acetate was discontinued. Treatment for hyperlipidemia with a low-fat diet was started. Eight days following discontinuation of megestrol acetate, serum triglyceride (50 mg/dL), cholesterol (93 mg/dL), and glucose (112 mg/dl) levels returned to normal limits. Ophthalmologic examination revealed that the cloudy white discoloration of both eyes was completely disappeared. Intraocular components were clearly visible (Figure 2) and there was no abnormality in the shape and conformation of the iris. The pupil size and pupillary light response were determined normal in both eyes. On direct ophthalmoscopy, optic disc and tapetal area appeared normal and both eyes seemed to be visual.

In the presented case hyperlipidemia was noted during routine laboratory investigation. Hyperlipidemia is defined as an increased concentration of triglycerides (hypertriglyceridemia), cholesterol (hypercholesterolemia)

or both, in the blood (4). Pathological hyperlipidemia may be primary, or secondary, to altered lipid metabolism in the fasted state in association with disease or medications. Primary hyperlipidemia is often familial and occurs in humans, dogs, and cats. Secondary hyperlipidemia may occur in association with disease, or drug-administration including estrogens, progesterone, corticosteroids, and retinoid, and is more common in cats and dogs than primary hyperlipidemia (5). In the cat described here, according to the history of drug therapy, the cause of hyperlipidemia was considered drug-induced hyperlipidemia. In this cat long term administration of megestrol acetate resulted in marked hypertriglyceridemia, hypercholesterolemia, and mild hyperglycemia. Disorders of lipid metabolism resulting in hyperlipidemia may be associated with characteristic ocular lesions in both humans and animals. Ocular manifestations of hyperlipoproteinemia are quite common in dogs, but rare in cats (6). Lipids may occur in the anterior chamber and cause a sudden diffused gray-white opacity filling the anterior chamber. The condition is usually unilateral and occurs in animals that have concurrent hyperlipidemia, either from ingestion of high fat meal or from a metabolic problem (7). The treatment of a patient with secondary hypertriglyceridemia is based on managing the underlying condition. Most cases of lipid in the humor aqueous seem to resolve within 2 or 3 days (8). In our case discontinuation of drug therapy in association with low fat diet resulted in resolution of hyperlipidemia and anterior chamber lipemia. Also

hyperlipidemia, cutaneous xanthomatosis and diabetes mellitus have been reported following the long-term megestrol acetate therapy in the cat (9). However, lipid-laden aqueous humor has not been documented in cats following administration of megestrol acetate. The author advises the recognition of this problem and

discontinuation of the megestrol acetate if similar ocular findings develop until symptoms completely disappear. Careful history taking and measurement of blood levels for triglyceride and cholesterol are useful diagnostic tests in such cases.

## References

1. Hart, B.L., Eckstein, R.A., Powell, K.L., Dodman, N.H.: Effectiveness of buspirone on urine spraying and inappropriate urination in cats. *J. Am. Vet. Med. Assoc.*, 1993; 203: 254-258.
2. Cooper, L., Hart, B.L.: Comparison of diazepam with progestin for effectiveness in suppression of urine spraying behavior in cats. *J. Am. Vet. Med. Assoc.*, 1992; 200: 797-801.
3. Smith, M.M.: Oral and salivary gland disorders. In: Ettinger, S.J., Feldman, E.C., Eds. *Textbook of Veterinary Internal Medicine*. Fifth edn., WB Saunders, Philadelphia, 2000; 1118.
4. Nelson, R.W., Guillermo Couto, C.: *Small Animal Internal Medicine*. Mosby, Stylus, 2003; 822-823.
5. Vogelnest, L.J.: Cutaneous xanthomas with concurrent demodicosis and dermatophytosis in a cat. *Aust. Vet. J.*, 2001; 79: 470-475.
6. Crispin, S.M.: Ocular manifestations of hyperlipoproteinaemia. *J. Small Anim. Pract.*, 1993; 34: 500-506.
7. Martin, C.L.: *Ophthalmic Diseases in Veterinary Medicine*. Manson Publishing Ltd. London, 2005; 326.
8. Hardman, C., Stanley, R.G.: Blue eye in a cat. *Aust. Vet. J.*, 1998; 76: 602-603.
9. Kwochka, K., Short, B.G.: Cutaneous xanthomatosis and diabetes mellitus following long-term therapy with megestrol acetate in a cat. *Comp. Cont. Educ. Pract. Vet.*, 1984; 6: 185-192.