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Case Report

Lipid-Laden Aqueous Humor in a Cat

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Abstract

This case report describes the clinical findings in a 5 years old neutered female cat presented with sudden onset of binocular blindness with cloudy appearance in both eyes. Systematic eye examination was performed after the anamnesis. Only intraocular pressure was increased in right eye. The examination of iris was not properly due to the opacity of humor aquosus. Liver function was checked in terms of diabetes and pancreatitis. Cholesterol and triglyceride levels were increased in blood analysis. The diagnosis was hyperlipidemia and hypertriglyceridemia. Dexamethasone (0.5 mg/kg) was applied to the subconjunctivaly; dexamethasone 0.1% w/v opthalmic solution drops (6 times in a day) and low-fat diet were recommended in the continuation of the treatment. The patient was immediately responded to the treatment within 36 hours. Aqueosus humor reached clear structure in both eyes. A visual activity was improve in the eyes. Post-operatively, the case was followed for 8 months. There were no complications encountered. This report is to contribute to increased awareness regarding the some ocular complications following diet programmes. In addition, the use of steroid ophthalmic solutions along with a diet program in the treatment protocol will accelerate the healing process quickly.

Keywords: *Cat, Hyperlipidemia, Hypertriglyceridemia, Lipid-laden*

Bir Kedide Lipid-Laden Humor Aquosus

Öz

Bu olgu sunumunda, 5 yaşındaki dişi kedinin her iki gözünde ani olarak şekillenen bulutumsu görünüm ile karakterize körlüğe ilişkin bulgular anlatılmaktadır. Anamnez bilgileri alındıktan sonra, olguya gözde sistemik göz muayenesi yapıldı. Göz içi basıncı sağ gözde yükselmişti. İris'in muayenesi, humor aköz daki opasiteden dolayı sağlıklı yapılamadı. Karaciğer fonksiyonlarına bakılarak, diyabet ve pankreatitis yönünden muayene edildi. Kan analizi sonuçlarında kolesterol, trigliserit miktarlarındaki artışın olması, teşhisin hiperlipidemi ve hipertrigliseridemi olduğunu gösterdi. Olguya az yağlı diyet ve subkonjunktival deksametazon (0.5 mg/kg) ve deksametazon %0.1 w/v oftalmik solüsyon damlaları (günde 6 kez), tavsiye edildi. Olgu 36 saat içinde sağaltıma yanıt verdi. Humor aquosus her iki gözde de berrak yapısına ulaştı ve görüş vardı. Post-operatif olarak olgu 8 ay takip edildi. Herhangi bir komplikasyonla karşılaşılmadı. Bu olgu sunumu, kedilerin gözlerinde meydana gelen bazı problemlerde diyet programlarının önemini vurgulamak için paylaşılmıştır. Ayrıca hiperlipidemia olgularında tedavi protokolüne diyet programı ile beraber steroid oftalmik solüsyonların önerilmesi iyileşme sürecini hızlandıracaktır.

Anahtar sözcükler: *Kedi, Hiperlipidemi, Hipertriglyceridemi, Lipid-laden*

INTRODUCTION

Primary lipid disorders are not commonly observed in cats. Lipid disorders secondary to hepatic lipidosis, diabetes mellitus, pancreatitis, hyperadrenocorticism and administration of pregestagens are more likely to account for fasting lipaemia in this species [1]. Lipid and/or mineral accumulation appears as sparkly, crystalline or shiny white areas in the cornea. Lipid metabolism is more affected in obese cats. Plasma triglyceride and cholesterol concentrations were significantly increased in obese cats [2]. As a result of increasing the lipid concentration in cats, lipids pass through the blood-aqueos barrier in the eye and cause the anterior chamber to become opaque or cloudy [3]. The incidence of obesity increases with age and is more frequent in neutered than intact animals. After the neutered cats its important to start special diet for prevent obesity and obesity-related diseases [1]. The aim of this report is to contribute to increased awareness among veterinary practitioners regarding the ocular complications following diet programmes.

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CASE HISTORY

A five-years-old neutered female cat with the complaint of sudden onset of binocular blindness due to a white cloudy appearance in both eyes *(Fig. 1)*. The owner was noted significant weight gain last 4 months after the sterilization procedure. Firstly, the examination is conducted in dim ambient light. Respectively, schirmer tear test and intra-ocular pressure were measured. Intraocular pressures was 15 mmHg in the left eye and 35 mm Hg in the right eyes, The result of schirmer tear test was shown referals. 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, or ulceration during routine examination of both eyes under illumination of light. It was impossible to observe and evaluate the pole components of the anterior segment such as the anterior camera and iris because of the homogeneous blurred white color eyes. Nevertheless, iris has been evaluated for uveitis. Routine hematologic and serum biochemistry profiles were checked for the presence of inflammatory disorders. The bood was taken for complete blood count *(Table 1),* blood gas *(Table 2)* and serum biochemical profile analysis. Serum Gutamic-Pyruvic Transaminase (SGPT) 178 U/L (normal value 25-97 U/L), Cholesterol 182 mg/dL (normal value 71-156 mg/dL), Triglyceride 117 mg/dL (normal value 10-114 mg/dL), Amylase 2584 U/L (normal value 500-1800 U/L), LDH 135 U/L (normal value 58-120 U/L) [1]. The inflammation was not observed. According to the ocular signs and laboratory findings, a diagnosis of lipemia and subsequent lipid-laden aqueous humor was considered. Treatmet started with subconjunctival dexamethasone sodium phospate injection and Dexamethasone 0.1% w/v Opthalmic Solution Drops (6 times in a day) were prescribed for white colored eye. Eye drops solution that each ml contains 22.26 mg of dorzolamide hydrochloride

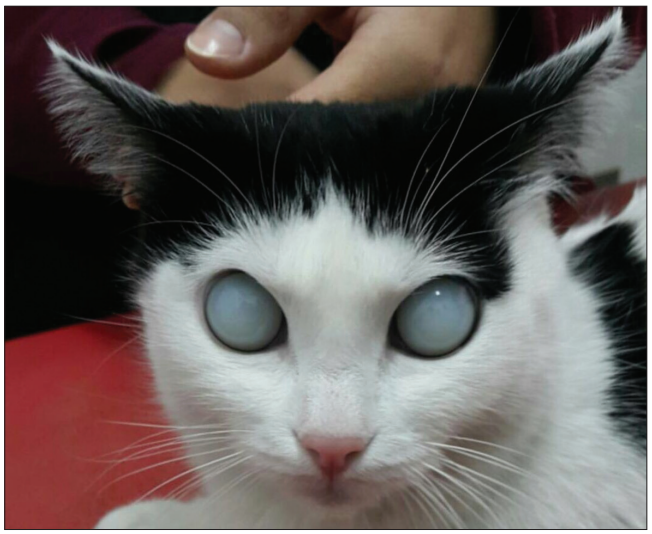

Fig 1. A five-years-old neutered female cat with the complaint of sudden onset of binocular blindness due to a white cloudy appearance in both eyes

Table 1. *Complete blood count results of case*

Parameters		**Values**
Blood gas values	pH	7.327
	pCO_2	30.6 mmHg
	pO_2	41.8 mmHg
Oximetry values	ctHb	13.0 g/dL
	Hctc	400%
	sO_2	62.2%
	FO_2Hb	59.3%
	FCOHb	2.7%
	FHHb	36.1%
	FMetHb	1.9%
	FHbF	45%
Electrolyte values	cK^+	3.4 mmol/L
	cNa^{++}	165 mmol/L
	cCa^{++}	0.81 mmol/L
	cCl^-	127 mmol/L
Metabolite values	cGlu	113 mg/dL
	cLac	1.4 mmol/L
Oxygen status	ctO_2c	10.9 Vol%
	p50c	34.90 mmHg
Acid-base status	cBase (Ecf)c	-10.0 mmol/L
	$cHCO_3$	16.0 mmol/L

Table 2. *Venous blood gas results of case*

Parameters	**Values**
WBC	19.41 m/mm³
Lym.	57.0%
Mon.	6.9%
Gra.	36.1%
Lym#	11.06 m/mm³
Mon#	1.33 m/mm³
Gra#	7.02 m/mm³
RBC	10.83 m/mm³
MCV	43.6 fl
Hct	47.2%
MCH	13.5 pg
MCHC	31.1 g/dL
RDW	10.8
Hb	14.7 g/dL
THR	213 m/mm³
MPV	10.2 fl
Pct	0.22%
PDW	9.0

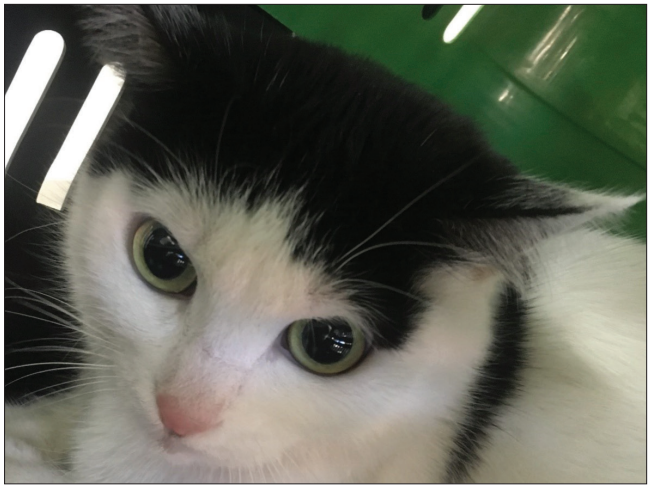

Fig 2. After the drug administration intraocular components are clearly visible

corresponding to 20 mg dorzolamide and 6.83 mg of timolol maleate corresponding to 5 mg timolol drops were prescribed for high intraocular pressures. Urgently low-fat diet was recommended to patient. On the other hand, it was also assessed in terms of pancreatitis due to the high amylase level.

On the next day ophthalmologic examination, it was observed that the cloudy white color completely disappeared on both eyes and the intraocular components were clearly visible and there was no abnormality in iris shape and conformation *(Fig. 2)*. For this reason, it was emphasized that lipidemia was the main reason. Intraocular pressures were 15 mmHg in the left eye and 37 mmHg in the right eyes for next day. 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. Retinal examination was not shown any a pale appearance. Thus, no problems were encountered in the follow-up period of 8 months after the treatment and suggestion.

DISCUSSION

Primary lipid disorders are not commonly observed in cats. Lipid disorders secondary to hepatic lipidosis, diabetes mellitus, pancreatitis, hyperadrenocorticism and administraiton or pregestagens are more likely to account for fasting lipaemia in this species [2]. Lipid and/or mineral accumulation appears as sparkly, crystalline or shiny white areas in the cornea. Plasma triglyceride and cholesterol concentrations were significantly increased in obese cats, compared with lean cats [2]. As a result of increasing the lipid concentration in cats, lipids pass through the blood-aqueos barrier in the eye and cause the anterior chamber to become opaque or cloudy [2]. The incidence of obesity increases with age and is more frequent in neutered than intact animals [4]. Special diet programme should be started to prevent obesity and obesity-related diseases in neutered cats [5,6]. The more common ocular consequences of hyperlipidemia in small animals include lipemia retinalis and lipid-laden aqueous humor. In patients with lipemia retinalis, retinal vessels appear white or creamy pink, which is reminiscent of blood taken from an animal that has recently eaten a fatty meal [1]. The blood-aqueous barrier generally prevents leakage of large molecules, like lipoproteins, into the aqueous humor but when barrier has a disorder lipids then enter the eye and cause the aqueous humor to appear turbid, variably cloudy, and, in some cases, completely opaque [1]. Increased triglycerides may result in brain dysfunction, acute pancreatitis, lipid-laden aqueous humor with anterior uveitis, and lipemia retinalis. Increased serum cholesterol can cause lipid keratopathy [6]. The main therapy of primary hyperlipidemia involves feeding a low-fat diet with moderate protein content. Diets low in protein may cause an increase in serum cholesterol concentration and are therefore not recommended unless the presence of other conditions warrant their use.

Although, lipid-Laden or hyperlipidemia is not seen very common in cats, but it should be considered in cats for the wrong diet programme. Cholesterol and triglycerides should be measured for diagnosis and prognosis, after routine eye examination. Uveitis must be assessed before diagnosis of lipid-Laden. Treatment options for hyperlipidemia include treatment of inciting diseases, diet modification, and pharmacologic intervention. Hyperlipidemia secondary to an underlying disorder will probably resolve or improve after the metabolic disturbance is corrected.

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