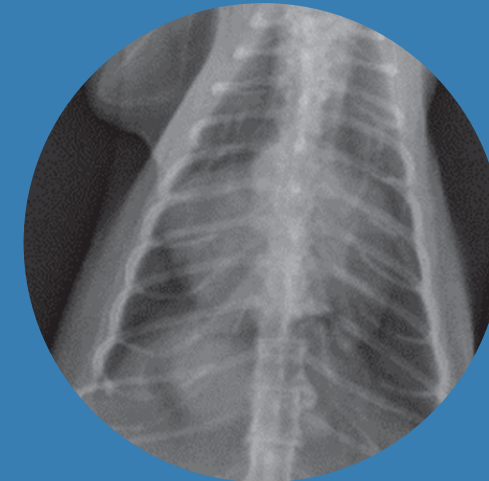


PRIVATE ANIMAL HOSPITAL



2018 Antinol® Cat Case Study Contest

03



PCSO-524® (ANTINOL®) USE IN PERSIAN CAT WITH DYNAMIC HYPERTROPHIC OBSTRUCTIVE CARDIOMYOPATHY (HOCM)

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Abstract

A Persian cat aged 21 years was diagnosed with Dynamic Hypertrophic Obstructive Cardiomyopathy (HOCM) and treated with PCSO-524[®] (Antinol[®]) for 45 days. The cat regained quality of life and daily activities such as grooming and walking, increased appetite, ingestion and weight gain after the treatment. Serum Amyloid A (SAA), which is an inflammatory marker in cats, was reduced down to normal after 15 days of PCSO-524[®] (Antinol[®]) administration.

Keywords

PCSO-524[®] (Antinol[®]) Dynamic Hypertrophic Obstructive Cardiomyopathy (HOCM)

Introduction

Hypertrophic Cardiomyopathy (HCM) is the most common heart disease in cats. The clinical symptoms include hypertrophy of heart muscle at one or more spots and are usually found in left ventricle. Incidence of the disease is reported in Rag dolls, Maine Coon, Himalayan, Burmese, Sphynx, Persian and Domestic short hair cats. Genetic defects involving contractile protein, particularly Myosin binding protein C, was found in Rag dolls and Maine Coon cats. The disease is detected most in middle aged cats, however, it can be diagnosed in young cats, especially Rag dolls cats as well. The thickened muscle of right ventricle has various effects on function of the heart depending on type of hypertrophy. If it is mild or focal, the cat may not show any symptoms at all. When severe hypertrophy occurs, function of ventricles is disrupted causing intra-cardiac pressure and Congestive Heart Failure (CHF) with pulmonary edema or pleural effusion (Medron, 2014).

Hypertrophic Obstructive Cardiomyopathy (HOCM) is a category of Hypertrophic Cardiomyopathy (HCM) which interventricular septum is enlarged causing stenosis of ventricular outflow tract of left or right ventricle. In this condition, mitral valve may be sucked into outflow tract causing obstruction of the tract. The obstruction can be either dynamic or fixed obstruction (French, 2008). The pumping of left ventricle is disrupted since mitral valve is shifted further to the ventricle and obstruct the circulatory flow (Dynamic Obstruction of the Left Ventricular Outflow tract; DOLVOT). The occurrence of DOLVOT in humans can cause sudden death, cardiac arrhythmia, and blood clot in left atrium. If the blood clot detaches and circulates to aorta, it can obstruct arteries, especially iliac artery which transports blood to posterior appendices. The occurrence is named Feline Arterial ThromboEmbolism (FATE). FATE will eventually cause enlargement of left ventricle and myocardial infarction called remodeling (Medron, 2014).

Omega-3 Polyunsaturated Fatty Acid consisting of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) is commonly found in cell membrane in small amount. Increased amount is a result of ingestion of diet that support function of heart by reduce inflammation, increase appetite, and decrease the risk of arrhythmia, for example (Freeman, 2013).

Case history, Medical history and Underlying disease

A Persian intact female cat aged 21 years and weighed 2.75 kg was submitted to the hospital due to acute expression of dyspnea, staying in lateral recumbency posture, lethargy and dilated pupils. The cat was normal on the day prior to the admission. There is no history of accident. The owner adopted a 4-month old cat 2 days prior to the incidence and the cats got along well with each other. Within the past months, the cat was treated for anemia by receiving blood transfer. X-ray examination in the past 2 years showed cardiac enlargement. A diagnostic test using SNAP Feline proBNP was positive. The cat was never treated for any cardiac disorders. Blood pressure was normal. Taurine 250 mg per day was prescribed. The cat's weight was reduced from 4.5 kg to 2.75 kg.

Diagnostic Plan and Results

Physical examination

Physical examination found 98°F body temperature, 2/5 body condition score, dilated pupils, lethargy, pale mucous membrane, and dyspnea. Heart rate was 180 beat per min. Pulse was weak and CRT was greater than 2 seconds. Murmur sound was detected. Systolic and Diastolic pressure was 88 mmHg and 60 mmHg, respectively.

Hematology and blood chemistry examination

Hematology tests showed normal results (Table 2). Blood chemistry tests found that AST (SGOT) and Serum Amyloid A (SAA) was slightly above normal range (Table 3). Leukemia virus and Feline AIDS test kits showed negative results. Thyroid hormone and blood sugar was normal (1.5 mcg/dl and 82 mg/dl, respectively). Blood oxygen was slightly below normal level.

X-ray examination

X-ray images showed cardiac enlargement and space occupying lesion at the caudal lung lobe (Figure 1).

Ultrasonography examination

Dynamic Hypertrophic Obstructive Cardiomyopathy (HOCM) was detected from Ultrasonography examination (Figure2 and Table 1)

Treatment outcome and follow up

Hypoxic shock was treated with oxygenotherapy, intravenous administration of acetate fluid, and thermotherapy to increase body temperature. The cat regained conscious and awareness after receiving oxygen therapy and was able to ingest food and water within 8 hours of the treatment. Symptoms and blood pressure were monitored closely for 24 hours and found that the blood pressure returned to normal level. Further diagnosis used x-ray and ultrasonography examination to refine medical treatment. The owner of this case did not agree with using cardiac medication, therefore PCSO-524® (Antinol®) 1 capsule bid was prescribed.

After 45 days of PCSO-524® (Antinol®) treatment, the cat successfully recovered. There were no signs of dyspnea and the cat regained more daily activities such as grooming, walking, and running. The cat increased appetite and body weight was increased from 2.75 kg to 2.95 kg within 45 days.

Hematology test results did not change after receiving PCSO-524® (Antinol®) for 45 days (Table 2). AST (SGOT) and Serum Amyloid A (SAA) was normal after 15 days of the treatment (Table 3).

Discussion

After 45 days of PCSO-524® (Antinol®) treatment, the cat successfully recovered. There were no signs of dyspnea and the cat resumed more daily activities such as grooming, walking, and running. The cat increased appetite and body weight was increased from 2.75 kg to 2.95 kg within 45 days. Omega-3 supplement is beneficial in case of Congestive Heart Failure (CHF) in humans and dogs as it reduces the risk of arrhythmia. The action of omega-3 includes reduction of cytokine and circulatory system and increasing appetite in dogs suffering from cardiac cachexia. Recommended dosage in dogs is 40 mg/kg EPA and 25 mg/kg DHA (Cunningham and Hall, 2011).

PCSO-524[®] (Antinol[®]) is supplement extracted from New Zealand green-lipped mussel (*Perna caniculus*) and mixed with olive oil and vitamin E. It is a rich source of sterol esters, sterols, polar lipids, triglycerides and free fatty acid including EPA and DHA. It prohibits function of proinflammatory leukotriene (LT) B₄ in human monocytes and reduces Thromboxane B₂, prostaglandin (PG) E₂ and Interleukin (IL) 1 β . This mechanism is similar to the function of omega 3 PUFA (Mickleborough, 2013). Its anti-inflammatory, gastroprotective, antihistamine, antioxidant, anticytokines and antiarthritis effects have been reported (Coulson et al., 2015).

Reduction of Serum Amyloid A (SAA), which is an acute phase protein used as inflammation marker, is consistent with the effect of PCSO-524[®] (Antinol[®]). As a supplement consisting mainly of Omega-3 Polyunsaturated Fatty Acid such as eicosapentaenoic (EPA) and docosahexaenoic (DHA), PCSO-524[®] (Antinol[®]) has cardio protective and anti-inflammatory effect and immunomodulatory activity. When compared to fish oil, PCSO-524[®] (Antinol[®]) is more effective for controlling inflammation (Jamikorn and Yibchok-auun, 2014). Taurine use is indicated for treatment of taurine deficiency and not for Hypertrophic Cardiomyopathy (HCM) (Etkin, 2004).

Conclusion and Take home message

Use of PCSO-524[®] (Antinol[®]) in cats having Dynamic Hypertrophic Obstructive Cardiomyopathy (HOCM) in this case resulted in improvement of life quality and activities including appetite and weight gain. The effect of PCSO-524[®] (Antinol[®]) is due to main ingredient, Omega-3 Polyunsaturated Fatty Acid, that is consisting of eicosapentaenoic (EPA) and docosahexaenoic (DHA). Decrease of Serum Amyloid A (SAA) which is an inflammatory marker in cats indicates that EPA and DHA have cardio protective and anti-inflammatory effect, and enhance immunomodulatory activity.

Cardiac cachexia is a condition that the body loses lean body mass. It can occur in humans who have heart failure. In animals, cardiac cachexia is found in case of Congestive Heart Failure (CHF) resulting in weakness, compromised immune, and decreased chance of survival. Cardiac cachexia syndrome is also induced by other conditions such as anorexia, increased energy demand, and change of metabolism. Inflammatory cytokines such as tumor necrosis factor and interleukin 1 are directly associated with cachexia since they cause anorexia, increased energy demand, and loss of body mass. Treatment of cachexia therefore requires inhibition of cytokines function. Fish oil supplement is effective for control of inflammatory cytokines as it has high Omega-3 Polyunsaturated Fatty Acid that can reduce the risk of having cachexia and Congestive Heart Failure (CHF). Fish oil supplement can also increase appetite (Freeman, 2013).

The cat in this case study was prescribed with PCSO-524[®] (Antinol[®]) which is highly consisting of Omega-3 Polyunsaturated Fatty Acid similarly to fish oil. Therefore, similar treatment effects such as increased appetite and reduced chance of cardiac cachexia was observed from improvement of ingestion and weight gain.

To treatment of Dynamic Hypertrophic Obstructive Cardiomyopathy (HOCM) in cats, veterinarians may have to consider medications that have effects on cardiac function, blood pressure, and anti-inflammation. Monitoring of any abnormal signs by the owner is also necessary since the disease may cause acute disorders at all time. In this case, only one cat with Dynamic Hypertrophic Obstructive Cardiomyopathy (HOCM) was treated and more cases should be explored for further study.

Figures and tables

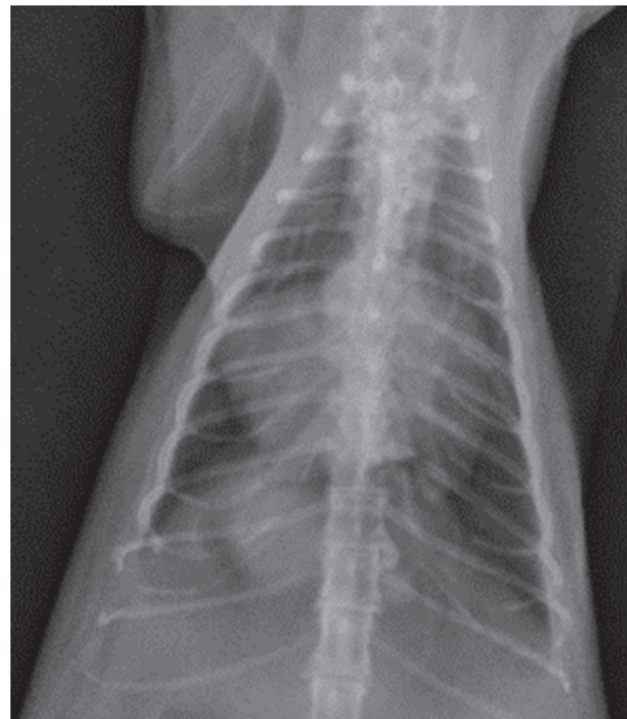
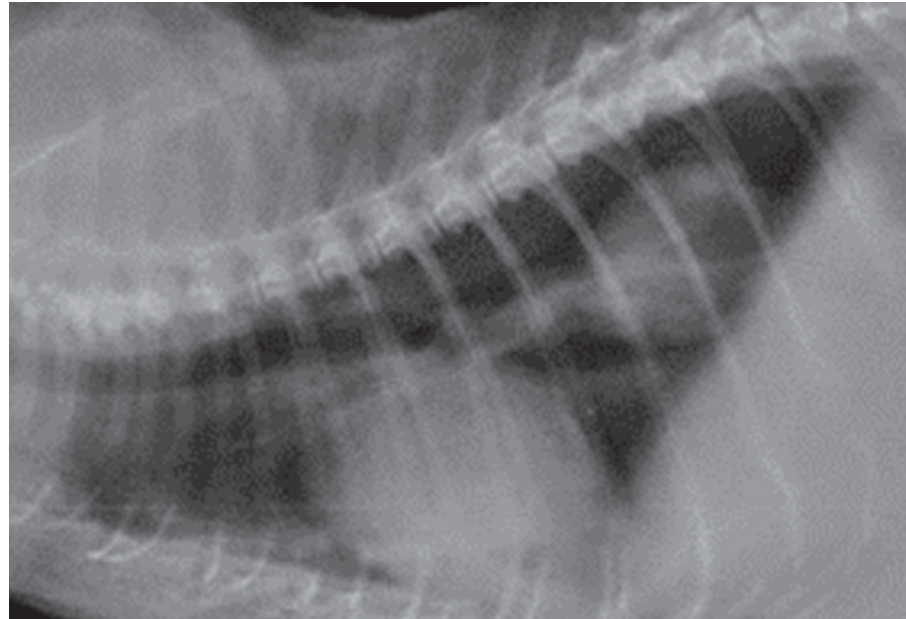


Figure 1. X-ray images showing heart enlargement and Space occupying lesion at the right lung lobe in female Persian cat aged 21 years

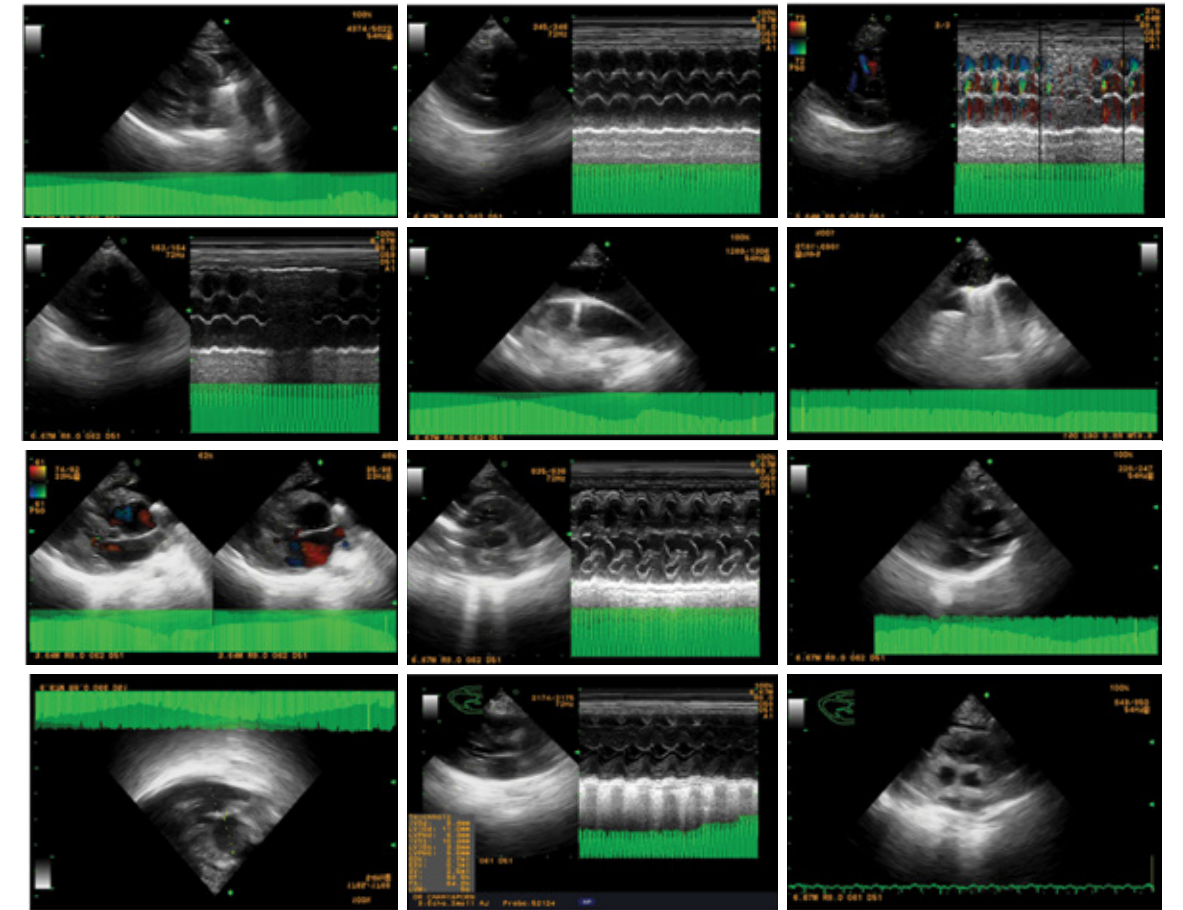


Figure 2. Results of M mode Echocardiography of the heart in female Persian cat aged 21 years showing IVSd (9.40 mm), LVDd (11 mm), PWd (6.30 mm), IVSs (10.40 mm), LVDs (3.9 mm), PWs (9.6 mm), LV mass (ASE) (15.37 g.), RWT (1.15), EDV (Teich) (2.66 ml), ESV (Teich) (0.1 ml), EF (Teich) AO (9.00). Dynamic Hypertrophic Obstructive Cardiomyopathy (HOCM) was diagnosed.



Table 1. Results of echocardiography examination in female Persian cat aged 21 years

1.General	No mass are noted.There is mild pleural effusion with pleuntis.
	Heart rate is normal and rhythm appeared LBBB throughout the examination.
	Blood pressure, Systolic 88 mmHg Diastolic 60mmHg MAP60mmHg Heart rate172bpm.
	The left and right atrial chambers appear mild dilated and wall thickness of IVS,LVW,RVW appears severe thickness(>6mm).
	Symetrical concentric LV hypertrophy without pericardial effusion.
2.Mitral Valve	Right parasternal long axis and Left apical 4 chamber view
	Normal appearance of mitral valve leaflet
	Mild to moderate function mitral valve regurgitation
3.Tricuspid Valve	Right parasternal long axis and Left apical 4 chamber view
	Normal appearance of tricuspid valve.
	Mild to moderate function tricuspid regurgitation
4.Aortic Valve	The aortic valve is normal in structure and function.
	The aortic valve is trileaflet and open well.
	No hemodynamically significant valvular aortic stenosis.
	Mild aortic regurgitation is present.
5.Pulmonic Valve	The pulmonic valve is normal in structure and function.
	The pulmonic valve is trileaflet. The pulmonic valve open well.
	No hemodynamically significant valvular pulmonic stenosis.
	No pulmonic regurgitation is present.
6.Pericardium	Normal
	No pericardium effusion was seen.
Diagnosis	Dinamic Hyperthrophic Obstructive Cardiomyopathy (HOCM)

Table 2. Hematological test results during 45 days of PCSO-524® (Antinol®) administration

Hematological parameter	Unit	Normal range	Day 0	Day 15	Day 30	Day 45
CBC	X106 cells/mm³	5-10	8.5	10.9	10.1	7.6
Hemoglobin	g/dl	10-15	12.7	14.2	12.3	12.6
Hematocrit	%	30-45	37	42	35	38
WBC	cells/mm³	5,500-19,000	10,600	9,100	9,500	10,300
Neutrophils	%	35-75	59	65	84	76
Band	%	0-2	0	0	0	0
Eosinophils	%	0-4	11	4	1	5
Lymphocytes	%	27-36	29	29	14	18
Monocytes	%	0-5	1	2	1	1
Platelet	X109 cells/mm³	300-600	355	358	386	338



Table 3. Clinical blood chemistry test results during 45 days of PCSO-524® (Antinol®) administration

Clinical Blood Chemistry	Unit	Normal range	Day 0	Day 15	Day 30	Day 45
SGPT(ALT)	U/L	10-100	89	54	62	55
SGOT(AST)	U/L	10-100	117	98	102	86
Creatinine	mg/dl	0.6-2.4	1.6	1.4	1.4	1.6
BUN	mg/dl	14-36	31	24	20	29
AlkalinePhosphatase	U/L	10-50	68	49	52	44
Cholesterol	mg/dl	75-220	149	120	125	119
Triglyceride	mg/dl	29-291	112	98	68	51
SerumAmyloidA(SAA)	Ug/ml	< 5	10.5	< 5	< 5	<5

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NO. 2nd Sopon Sornsanit, DVM	WVC 2020 USE OF PCSO-524 [®] (ANTINOL [®]) AND ANTIPRURITIC DRUG FOR TREATMENT OF ITCH CAUSED BY FLEA ALLERGYDERMATITIS (FAD) ANDPSYCHOLOGICAL ALOPECIA IN DOMESTIC SHORT HAIR CAT
NO. 3rd Kanok Bamrungsri, DVM	KOREA TRIP 2019 PCSO-524 [®] (ANTINOL [®]) USE IN PERSIAN CAT WITH DYNAMIC HYPERTROPHIC OBSTRUCTIVE CARDIOMYOPATHY (HOCM)



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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.

John Dennis Waitzer
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Pharmalink International Limited

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Vetz Petz® group

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

