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The Evaluation and Management of Idiopathic Chylopericardium in a Cat: A Case Report

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ABSTRACT

Chylopericardium is rare in cats. Here, we report the case of a 5-year-old female cat, a domestic short-haired breed, who presented with difficulty breathing, loss of appetite and lethargy at the Kasetsart University Veterinary Teaching Hospital, Nongpho campus, Thailand. Thoracic radiography revealed a globoid-shaped cardiac silhouette, while electrocardiography demonstrated electrical alternans. Echocardiography also revealed an effusion of fluid in the pericardial sac. Cytological analysis of the pericardial fluid proved the diagnosis of chylopericardium. The cat was treated conservatively with pericardiocentesis, antibiotics and supportive care, leading to clinical improvement within one week.

Key words: Cat; Chylopericardium; Echocardiography; Treatment; Pericardium.

INTRODUCTION

Chylopericardium commonly occurs as a complication of cardiovascular operation or trauma or is associated with conditions such as lymphoma, congenital abnormalities (e.g., thoracic duct rupture), increased venous pressure, or heart disease (Pongprot et al. 2003). When no specific cause can be identified, it is classified as idiopathic chylopericardium. Idiopathic chylopericardium is a rare condition characterized by the accumulation of chyle, a milky fluid rich in lymph and fat within the pericardial space due to lymphatic system abnormalities (Mehrotra et al. 2006; Singh et al. 2023).

The proposed mechanisms include thoracic duct valve dysfunction, increased permeability of lymphatic vessels due to elevated thoracic duct pressure, or direct communication between the thoracic duct and pericardial lymphatics. Although the precise pathophysiology remains uncertain, recent studies suggest that lymphatic leak and its connection with the pericardial sac may play a role (Cifuentes et al. 2022).

In cats, pericardial effusion is most commonly linked to neoplasia or idiopathic pericarditis and often leads to cardiac tamponade (Hall et al. 2007; Amati et al. 2014; Machida et al. 2022).

In dogs, particularly males of large or giant breeds, a history of chronic right-sided congestive heart failure is commonly observed. The cause may be unknown or secondary to other clinical symptoms (Boston et al. 2006). Cats with pericardial effusion may present with nonspecific signs such as lethargy, loss of appetite, or exercise intolerance. Signs of cardiac tamponade, such as muffled heart sounds, tachycardia, weak pulses, or respiratory distress, might be observed if the effusion is significant (Fossum 2001). Chylopericardium can occur at any age and shows no sex predilection in humans. The clinical presentations range from asymptomatic cases to symptoms such as dyspnea, cough and fatigue (Silva et al. 2009).

Under normal conditions, the pericardial space carries approximately 20-30 mL of pericardial fluid. In cases of chylopericardium, the accumulated fluid appears milky-yellow, with a cholesterol/triglyceride ratio of less than 1.0, triglyceride levels greater than 200-500µg/dL, a predominance of lymphocytes and negative microbial cultures. Diagnosis is primarily based on imaging techniques such as echocardiography, chest radiography, and computed tomography (CT). Additionally, confirmation can be achieved through the use of radiolabeled triglycerides or fatty acids, which help trace lipid absorption pathways (Pectasides et al. 1986).

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The optimal management strategy involves draining the fluid to improve heart function and relieve cardiac tamponade. In addition, medical interventions for right-sided heart failure help relieve cardiomyopathy in cats (Fossum 2001; Alleman 2003). Treating chylopericardium by ligating the thoracic duct and performing partial pericardiectomy usually provides good therapeutic results in humans and dogs (Nanjo et al. 2004; Gidlewski and Petrie 2005). However, due to its rarity, there is limited data on the long-term outcomes and optimal treatment strategies in feline patients. This case report describes the clinical presentation, diagnostic approach, and successful management of idiopathic chylopericardium in a 5-year-old domestic shorthair cat, contributing valuable insights into recognizing and treating this rare condition in veterinary practice.

Patient presentation

A 5-year-old neutered female cat was referred to the cardiology clinic of Kasetsart University Veterinary Teaching Hospital, Nongpho campus, Thailand. A thoracic radiograph revealed global heart enlargement. The cat was dyspneic and had muffled heart sounds during cardiac auscultation. A repeat electrocardiogram (ECG) revealed abnormal electrical alternans (Fig. 1), and a chest X-ray revealed global heart enlargement (Fig. 2). Blood samples were collected and forwarded for routine hematological and biochemical investigations, as shown in Table 1. Thoracic radiography and echocardiogram were performed to make the diagnosis. Echocardiography revealed pericardial effusion (Fig. 3), pericardiocentesis was performed to evaluate and relieve cardiac tamponade, and 86mL of milky and opaque fluid was withdrawn and

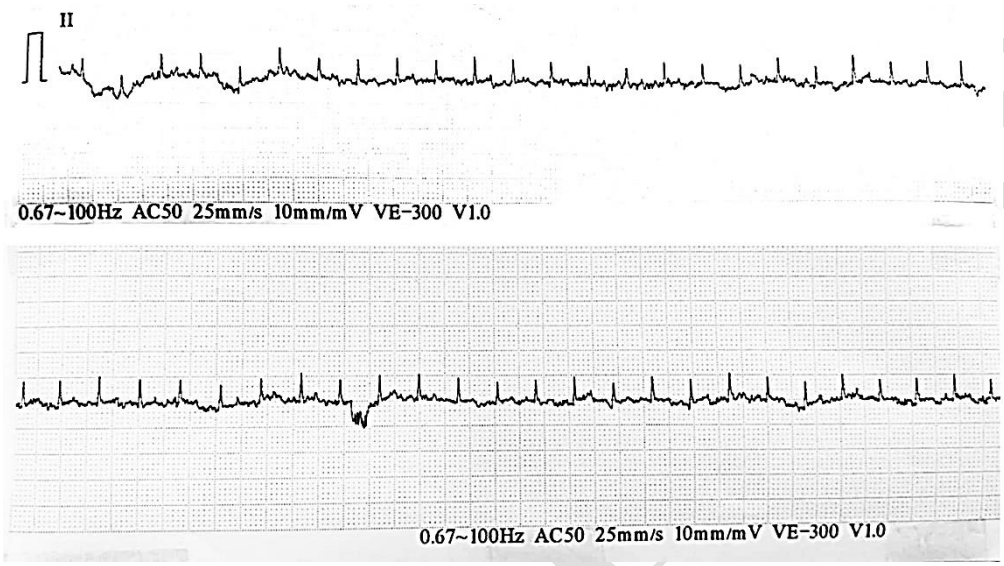

Fig. 1: Electrocardiogram showing low voltage in the limb leads and electrical alternans (10 mm/mV, 25 mm/s).

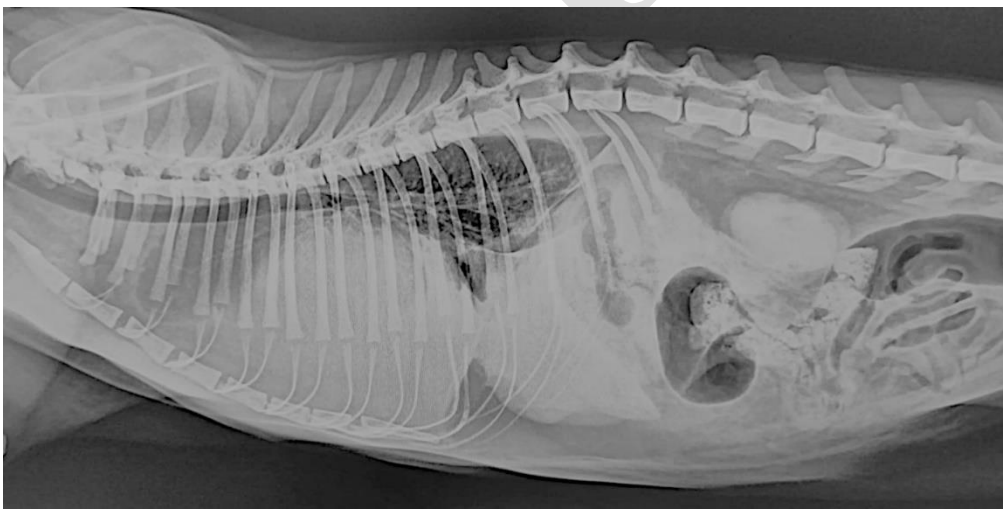

Fig. 2: The right lateral recumbency chest X-ray shows an enlargement of the cardiac silhouette.

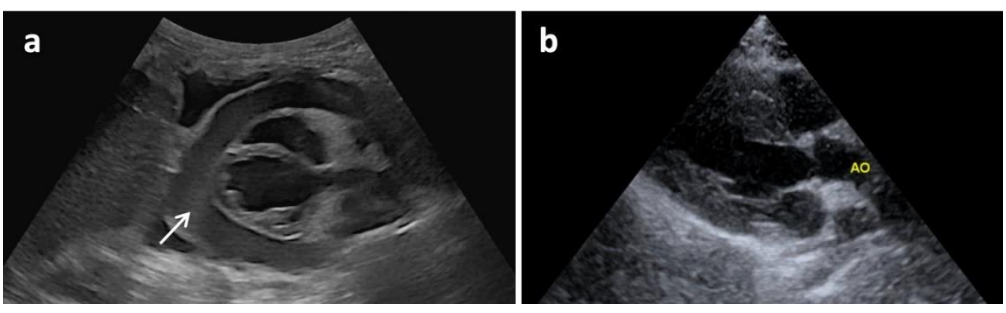

Fig. 3: A parasternal long-axis view of the heart showed the pericardial effusion (arrow) (a) before treatment and (b) 1 month after treatment.

Table 1: Signalment, hematological, and serum biochemical parameters before and after treatment

Parameter	Before	After (1 day)	After (7 days)	After (30 days)	Reference value
Age	5 years				-
Gender	Female				-
Breed	Domestic short hair				-
WBC ($x10^3$/µL)	22.81	19.69	16.4	17.09	5.5-19
RBC ($x10^6$/µL)	7.94	7.03	7.34	8.33	5-10
HGB (gm%)	13	11.4	12	14.3	10-15
PCV (%)	38.3	33.8	34.8	41.1	30-45
Platelets ($x10^3$/µL)	700	355	740	700	
Segmented neutrophil ($x10^3$/µL)	92	93	82	79	2.5-12.5
Lymphocyte ($x10^3$/µL)	7	7	18	18	1.5-7.0
Monocyte ($x10^3$/µL)	0	0	0	0	0-8.5
Eosinophil ($x10^3$/µL)	1	0	0	3	0-7.5
BUN (mg/dL)	32.9				15-34
Creatinine (mg/dL)	0.94			1.13	<2.0
Total Proteins (g/dL)	6.1			7.7	5.8-7.8
ALT (U/L)				154	28-76
Albumin (g/dL)	2.6			3.10	2.8-3.9

Table 2: Echocardiography parameters before and after treatment

Parameters	Before treatment		7 days after treatment
	Before Pericardiocentesis	After Pericardiocentesis	
Echocardiography			
IVSs (cm)	-	0.45	0.48
IVSd (cm)	-	0.27	0.29
LVIDs (cm)	-	0.68	0.62
LVIDd (cm)	-	1.52	1.34
LA: Ao	-	2.46	1.6
FS (%)	-	55.29	54.07
Pericardial effusion diameter (mm)	22.33	6.55	-
Heart rate (bpm)	132	204	237
VHS	12.5	-	7

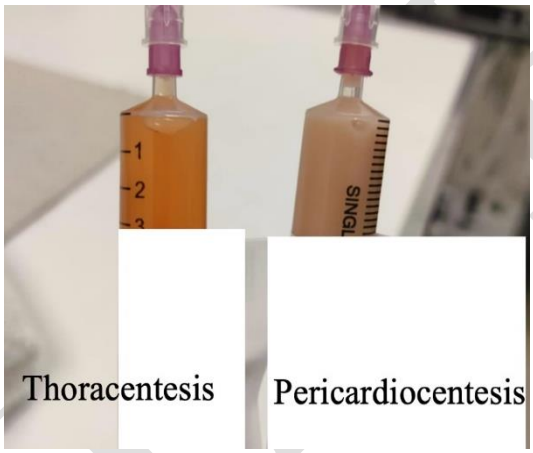

Fig. 4: Thoracocentesis and pericardiocentesis show serosanguineous and milky fluid presence, respectively.

no tumor cells revealed (Fig. 4). Treatment with amoxicillin-clavulanate (25mg/kg IV every eight hours) and pericardiocentesis led to clinical improvement.

Echocardiography

The cat underwent echocardiographic examination using the LOGIQ E10S ultrasound system to investigate heart function. The results of the echocardiographic examination were recorded at the first visit and after the treatment (Table 2). Measurements were obtained from parasternal long- and short-axis views with the cat positioned in lateral recumbency without sedation. Echocardiographic images were acquired and stored for offline analysis. Cardiac structure and function were assessed using measurements from two-dimensional and M-mode imaging. Heart dimensions were recorded during both diastole and systole to determine echocardiographic parameters. Echocardiography revealed pericardium effusion, which was two to three centimeters of excess fluid surrounding the pericardial sac.

Thoracocentesis and pericardiocentesis

The cat underwent thoracocentesis at the seventh intercostal space at the costochondral junction and pericardiocentesis on the right side at the fourth intercostal space without sedation. Ultrasound examination-guided pericardiocentesis followed the previously described method by Loughran (2021). A 6-lead electrocardiogram was used to define the heart rhythm. Pericardiocentesis, in addition to pericardial fluid analysis, was performed; 86 mL of milky and opaque chylous fluid was collected, and further evaluation via bacterial culture and cytology was performed. The pericardial fluid analysis confirmed high triglyceride content, usually exceeding plasma triglyceride levels.

Cytology, blood profiles and treatment

Routine hematology and clinical biochemistry, including T4 level, were performed. The hematological profiles of the cat revealed anemia with a decreased packed cell volume (PCV). The biochemical blood profiles revealed elevated hepatic enzymes, such as alkaline phosphatase (ALP). The cat was intravenously administered amoxicillin-clavulanate (25mg/kg, q8h).

DISCUSSION

We would like to report the diagnosis and potential treatment of chylopericardium in a cat. In our case, the applied protocol resulted in complete recovery and marked improvement in cardiac function. As reported in human studies, the diagnosis of chylopericardium primarily relies on imaging techniques such as echocardiography, chest radiography, and computed tomography (CT). Further confirmation can be achieved by using radiolabeled triglycerides or fatty acids, which help trace lipid absorption pathways (Pectasides et al. 1986).

The optimal treatment for idiopathic chylopericardium remains unclear. According to Mehrotra et al. (2006), the treatment approach depends on the underlying cause and the severity of clinical signs. Options include dietary management using medium-chain triglycerides and thoracic duct ligation to prevent chyle from entering the pericardial space. This surgical procedure may be necessary in cases of thoracic duct leakage.

Surgical intervention is generally recommended to prevent disease progression and clinical deterioration, even in asymptomatic cases. Conservative treatments often have a high failure rate and should only be considered when surgery is not feasible. Regular follow-up with imaging studies and fluid analyses is essential to monitor for recurrence or complications, such as pleural effusion (Bhat et al. 2011). Limited data exist on the effectiveness, safety, and clinical applicability of radiolabeled triglycerides or fatty acids in veterinary medicine.

Our case report supports the findings by Mehrotra et al. (2006), suggesting that pericardiocentesis to drain chyle from the pericardial space, along with symptom-based management, is a safe and viable option.

To our knowledge, thoracic duct ligation is commonly used in clinical practice. In our case, we employed conservative management with pericardiocentesis, resulting in a favorable outcome without adverse effects. However, further studies are necessary to determine and validate the most effective treatment approach for hemopericardium in cats.

Conclusion

In conclusion, the pericardiocentesis procedure was safe and considered a desirable treatment as it improves the prognosis and prevents cardiac tamponade. This study suggested that pericardiocentesis, in addition to antibiotic treatment, could be applied as possible therapeutics for chylopericardium in cats.

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REFERENCES

Alleman AR, 2003. Abdominal, thoracic, and pericardial effusions. Veterinary Clinics of North America Small Animal Practice 33(1): 89-118. https://doi.org/10.1016/s0195-5616(02)00057-8

Amati M, Venco L, Roccabianca P, Santagostino SF and Bertazzolo W, 2014. Pericardial lymphoma in seven cats. Journal of Feline Medicine and Surgery 16(6): 507-512. https://doi.org/10.1177/1098612x13506199

Bhat P, Ananthakrishna R, Panneerselvam A, Yalagudri SD, Rao PS and Nanjappa MC, 2011. Recurrent chylopericardium. BMJ Case Reports. bcr0720114520. https://doi.org/10.1136/bcr.07.2011.4520

Boston SE, Moens NM and Martin DM, 2006. Idiopathic primary chylopericardium in a dog. Journal of the American Veterinary Medical Association 229(12): 1930-1933. https://doi.org/10.2460/javma.229.12.1930

Cifuentes R, Celli D, Hernandez GA, Skiada D, Abbo L and Mendoza CE, 2022. Infected chylopericardium: An unexpected cause of cardiac tamponade. Journal of Cardiothoracic Surgery 37(12): 5517-5520. https://doi.org/10.1111/jocs.17038

Fossum TW, 2001. Chylothorax in cats: is there a role for surgery? Journal of Feline Medicine and Surgery 3(2): 73-79. https://doi.org/10.1053/jfms.2001.0113

Gidlewski J and Petrie JP, 2005. Therapeutic pericardiocentesis in the dog and cat. Clinical Techniques in Small Animal Practice 20(3): 151-155. https://doi.org/10.1053/j.ctsap.2005.05.002

Hall DJ, Shofer F, Meier CK and Sleeper MM, 2007. Pericardial effusion in cats: a retrospective study of clinical findings and outcome in 146 cats. Journal of Veterinary Internal Medicine 21(5): 1002-1007.

Loughran K, 2021. Focused cardiac ultrasonography in cats. Veterinary Clinics of North America Small Animal Practice 51(6): 1183-1202. https://doi.org/10.1016/j.cvsm.2021.07.002

Machida N, Hirakawa A, Kanno N and Hori Y, 2022. Cardiac Inflammatory Myofibroblastic Tumours in Three Young Adult Cats. Journal of Comparative Pathology 199: 99-108. https://doi.org/10.1016/j.jcpa.2022.10.002

Mehrotra S, Peeran NA and Bandyopadhyay A, 2006. Idiopathic chylopericardium: an unusual cause of cardiac tamponade. The Texas Heart Institute Journal 33(2): 249-252.

Nanjo S, Yamazaki J and Tsubuku M, 2004. Primary idiopathic chylopericardium: report of two cases. Annals of Nuclear Medicine 18: 537-539.

Pectasides D, Stewart S and Courtenay-Luck N, 1986. Antibody-guided irradiation of malignant pleural and pericardial effusions. British Journal of Cancer 53(6): 727-732.

https://doi.org/10.1038/bjc.1986.125

Pongprot Y, Silvilairat S and Cheuratanapong S, 2003. Isolated primary chylopericardium: a case report. Journal of the Medical Association of Thailand 86: 361-364.

Silva MA, Martins AS, Campos NL, Andrade RR, Tohi LM and Hueb JC, 2009. Primary idiopathic chylopericardium - case report. Brazilian Archives of Cardiology 92(6):e40-e70. https://doi.org/10.1590/s0066-782x2009000600004

Singh P, Singhal T, Shrestha J and Narayan M, 2023. Lymphoscintigraphy in idiopathic recurrent chylopericardium. BMJ Case Reports 16(1):e248088. https://doi.org/10.1136/bcr-2021-248088