Case Report

IDIOPATHIC CHYLOTHORAX IN AN AFGHAN HOUNDDOG - A CASE REPORT

R. Sokkalingam*[1], P. Selvaraj[2], Juripriya Brahma[3], P. Pothiappan and S. Kavitha

Department of Veterinary Clinical Medicine
Madras Veterinary College
Tamil Nadu Veterinary and Animal Sciences University, Chennai – 600 007

ABSTRACT

A 6 year old female Afghan Hound dog was presented to the Small Animal Critical Care Unit, Madras Veterinary College, TANUVAS, Chennai with a history of dyspnea, coughing, weight loss and anorexia for 5 days with abducted gait. On physical examination, thoracic auscultation revealed muffled heart sounds and lung sounds. Low amplitude QRS Complex was observed on electrocardiographic examination. Thoracic radiography revealed pleural effusion. An echoic fluid accumulation around the heart, floating lung lobe and fibrin string was observed during the ultrasonography examination. Heamatological and biochemical parameters were within the normal value. Thoracocentesis was performed and removed around 450ml of milky white fluid intermittently. Based on pleural fluid analysis the case was diagnosed as idiopathic chylothorax. The dog was treated with intravenous fluid, antibiotics, tablet rutin, diuretics and steroids. After 1 week of treatment animal recovered gradually.

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INTRODUCTION

Chylothorax is the accumulation of chylous fluid in the pleural space due to any disruption of the thoracic duct (TD). The chylous fluid comprises proteins, dietary fats, electrolytes, fat-soluble vitamins and cells of the immune system. It is a rare disease occurring with various etiologies including neoplasia, trauma, a congenital defect of the thoracic duct, blastomycosis, heartworm infection, diaphragmatic hernia, cranial mediastinal masses, right-sided heart failure and lung lobe torsion in dogs and cats (Fossum *et al.,* 2021). Afghan Hounds, ShibaInus and oriental breeds of cats are predisposed to develop chylothorax (McAnulty, 2011). Though in many cases underlying cause was cannot be identified and those cases known as idiopathic chylothorax. Medical management with repeated thoracocentesis is the initial treatment for chylothorax. Fibrin development can result in restrictive pleuritis and adhesions and the effusion often becomes pocketed and

[1]Ph.D. Scholar, Correponding author email id: drsokkuvet90@gmail.com

[2]Professor and Head, VUPH, TANUVAS, Madhavaram.

[3]Ph.D. Scholar

[4]Assistant Professor, Dept. of Clinics

[5]Professor and Head, Dept. of VCM

harder to fully drain (Birchard *et al.,* 1995, Sikkema *et al.,* 1993).

CASE HISTORY AND OBSERVATION

A six-year-old female Afghan Hound dog was presented to the Small Animal Critical Care Unit, Madras Veterinary College, TANUVAS, Chennai with the history of dyspnoea, coughing, weight loss and anorexia for 5 days with abducted gait. On physical examination, the rectal temperature was 38.7 °C with congested mucus membrane and cyanotic tongue was noticed. On thoracic auscultation muffled heart sounds and reduced lung sounds were noticed with tachypneic shallow costo-abdominal respiration. Thoracic radiography revealed increased opacity of soft tissue which indicates the presence of pleural effusion in the thoracic cavity (Fig.2). Ultrasonography revealed pleural effusion along with movable hyperechoic structure which is indicative of fibrin threads (Fig.3). Low amplitude QRS Complex was observed in Electrocardiographic examination (Fig.4). Haematological and biochemical parameters were within the normal range. Wet film and blood smear examination were also found to be negative for blood parasites. The animal was placed in lateral recumbency and the site was prepared aseptically for thoracocentesis (Fig.1). A 20 G winged needle with three-way stopcock was inserted perpendicular to the ventrolateral cranial border of the 8th intercostal space and the milky white opaque pleural fluid (Fig.4). which suggests chylous fluid, was collected in a sterile container for further analysis.

Diagnosis

The pleural effusion had high triglyceride level (945 mg/dl) than serum (125 mg/dl) which indicates chylous fluid and it was positive for the Ether clearance test (Fig 5). Cytology examination revealed Lymphocytosis (Fig.6). Incubation of pleural fluid had no microbial growth. Pleural fluid Protein estimation gave 5.69 mg/dl (reference range: <3 for transudates, >3 for exudates). Based on the above findings the case was diagnosed as idiopathic chylothorax. Ether clearance test was used to distinguish pseudo chyle from chyle (Beer., 2000). The addition of 1–2 ml of ethyl ether dissolves the lipid component of a chylothorax, clearing its milky appearance, whereas the appearance of pseudochyle will remain unchanged. However, given the variability in the macroscopic appearances of chyle, it is no longer considered a reliable test for chylous effusions.

TREATMENT AND DISCUSSION

Chylothorax is one of the common challenges in small animal practice. Afghan Hounds are found to be affected commonly (Ameetsingh *et al.,* (2012). As per the standard protocol 2% Lignocaine was used as a local anaesthetic, Thoracocentesis was done at the 7th to 8th intercostal space to drain out the chylous fluid approximately 450 ml (1st time), 300 ml (2nd time), 170 ml (3rd time), 60 ml (4th time) intermittently at 10 days interval. The animal was treated Initially with Inj. Ringer Lactate 10 ml/kg b.wtI/V, Inj. Ceftriaxone 20 mg/kg b.wt I/V, Inj. Furosemide 4 mg/kg b.wt I/V, Inj. Prednisolone 1mg/kg I/V and followed

by Tab. Cefodoxime 100 mg P/O SID, Tab. Furosemide 40 mg PO BID, tab. rutin 50 mg/kg body weight BID for a month with low-fat diets and minimal physical activities. Further ultrasonography and radiography revealed a drastic reduction in pleural effusion and dyspnea.

Chylothorax, characterized by the accumulation of chyle within the thoracic cavity, is a relatively uncommon that affect dogs. Hayash *et al.* (2005). reported that the cisterna chyli ablation with thoracic duct ligation (TDL) may improve the outcome of chylothorax in dogs. Successful treatment using omentalization, which involves bringing a flap of omentum through the diaphragm and anchoring it to the mediastinum between the thoracic duct and the cranial vena cava, has been reported in one dog (William and Niles, 1999). Idiopathic Chylothorax was treated by non-surgical management including: intermittent thoracocentesis, Tab. rutin: 50-100 mg/kg TID, Tab. Octreotide: 10 mcg/kg, SQ 10-28 days, low-fat diet, diuretics, fat-soluble vitamins, electrolyte solutions IV, intravenous hyperalimentation and surgical management included thoracic duct ligation, pericardectomy, cisterna chyli ablation, omentalization, pleural stripping, embolization. Palliative therapy: pleural port, pleuroperitoneal shunts, pleurovenous shunts, pleurodesis. Although the precise mechanism of action of rutin is uncertain, it is thought to increase the absorption of edema fluid by lymphatic channels, reduce blood vessel permeability, and increase tissue macrophage activity, encouraging phagocytosis of protein in edema fluid. Rutin being a neutraceutical, is considered a useful oral supplement in pets with idiopathic chylothoraxand it is suspected that rutin stimulates protein breakdown and removal in lymphatic vessels (Vishnurahav *et al.*, 2020*).*

In this report Rutin helped to alleviate the symptoms of idiopathic chylothorax to a larger extent. According to Ameetsingh *et al.* (2012), idiopathic chylothorax treated with non surgical approaches such as pleural evacuation and therapy with rutin had a 26 % and 40 % success rate, respectively (Fossum *et al.*, 2021).

CONCLUSION

Idiopathic chylothorax in an Afghan Hound dog was diagnosed and reported. While the number of Afghan Hounds maintained in India is relatively less, owing to their expensive cost diseases like chylothorax makes it much more challenging for the practitioners. Signs like dyspnea, coughing, weight loss and anorexia with abducted gaits in Afghan Hounds shall warrant suspicions for chylothorax. Muffled heart sounds and lung sounds are typical. While thoracic radiography helped in identifying the status of pleural effusion, thoracocentesis helped in removal of 450 ml of milky white fluid, there by confirming the chylothorax as well as relieving the effusion. The pleural fluid analysis confirmed it as idiopathic chylothorax. As the Afghan Hound breed is most commonly affected, practitioners needs to be watchful for these signs and perform early investigation and interventions to save these expensive animals.

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Fig. 1. Performing thoracocentesis

Fig. 2. Thoracic radiography-Pleural effusion

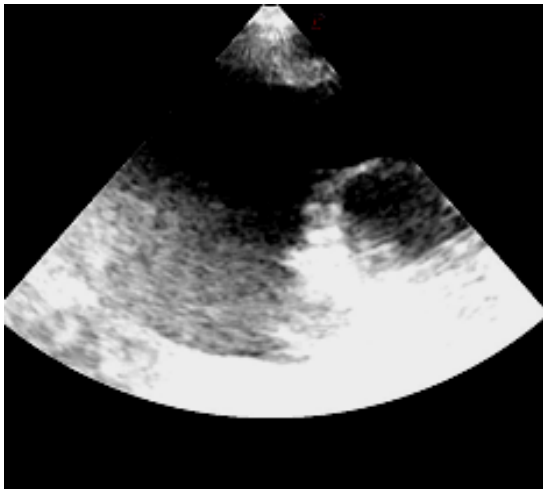

Fig. 3. Ultrasonography-Pleural effusion

Fig. 4. Milky white chylous fluid

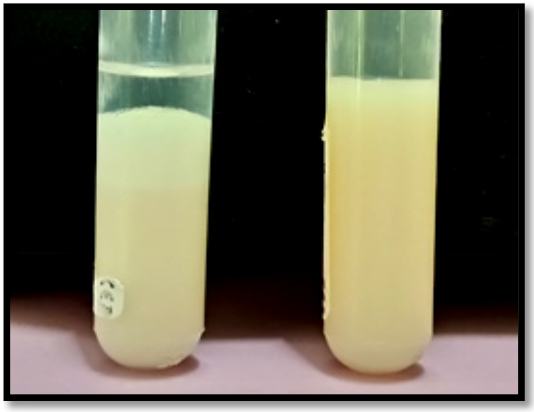

Fig. 5. Positive Ether Clearance test

A-Pleural effusion

B-Negative control

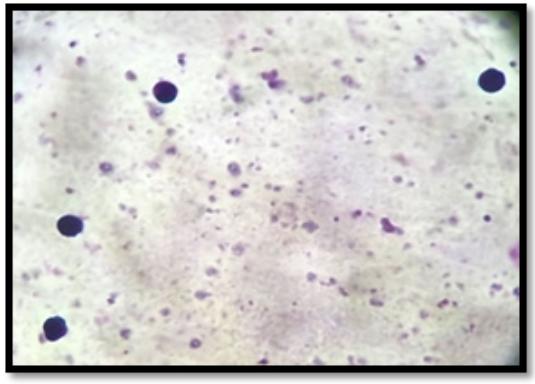

Fig. 6. Cytology examination: Lymphocytos