Management of Pleural Effusion due to Congestive Heart Failure in Dogs: A Case Series

M.P.U. Liyanage, E.R.K.V. Edirimanne, D.D.N. De Silva and I.D. Silva

Veterinary Teaching Hospital, Department of Veterinary Clinical Science, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya

The pleural space contains 3-5 ml of low protein clear fluid, production of which is controlled by Starling's forces. Excess fluid accumulation in the pleural cavity is called pleural effusion (PE). An effusion can be classified as pure transudate, modified transudate, exudate or chylous fluid according to its protein content, cellularity and specific gravity. The common causes of PE are congestive heart failure (CHF), neoplasia, hypoalbuminaemia, pleural infection and thoracic trauma. Clinical manifestation of PE is associated with respiratory signs including laboured inspiratory phase, easy expiration, abdominal breathing and tachypnoea. Reduced intensity of lung sounds upon auscultation and hyper-resonance of the dorsal lung fields during percussion are evidentiary of PE and can be confirmed by diagnostic imaging. Removal of a volume of pleural fluid by thoracocentesis is diagnostic as well as therapeutic as it facilitates breathing. This is performed by inserting a sterile IV cannula or butterfly needle through the mid 7^{th} or 8^{th} intercostal space.

The objective of this study was to discuss the management of PE in four canine (A, B, C, D) patients presented to the Veterinary Teaching Hospital (VTH) with clinical signs predominantly of respiratory origin and confirmed as PE due to CHF. Treatment was initiated for CHF and to reduce pleural fluid for dogs A and B by using digoxin (5.5 μg/kg PO), furosemide (4 mg/kg IV), spironolactone (3 mg/kg PO) and theophylline (10 mg/kg PO). Haematinics and amino acid supplements were given as liver supportives. PE subsided and they recovered from the respiratory distress.

As dogs C and D were presented in a critical condition, the excess pleural fluid was removed by thoracocentesis to facilitate breathing. This was performed under aseptic conditions, under ultrasonographic guidance to avoid damaging lung tissue. The fluid obtained was characterised as a modified transudate. Thereafter, they were treated similarly to A and B in order to manage CHF and PE. Dyspnoea was relieved only in dog C and it was discharged 10 days after hospitalisation. The prognosis of dog D was poor and the patient died 4 days after hospitalisation.

The findings of this study show that thoracocentesis is an option in managing PE in critical patients. Rapid removal of pleural fluid is not advisable as it can cause re-expansive lung injury..