Chylothorax Following Pda Ligation In A Dog With Persistent Left Cranial Vena Cava; Case Report And Literature Review

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Introduction: This report is the first to document chylothorax following patent ductus arteriosus (PDA) ligation in a dog with a persistent left cranial vena cava (PLCVC), highlighting potential complications arising from concurrent cardiovascular anomalies.

Case series summary: A nine-month-old female desexed Pomeranian was referred for PDA. Echocardiography confirmed a left-to-right shunt with mild left-sided cardiac changes from volume overload. At left fourth intercostal thoracotomy; an aberrant vein (5 mm) coursing over the PDA was retracted proximally to facilitate PDA ligation. Retraction was released prior to thoracotomy closure and the vein remained turgid and unaltered. The dog represented three days post-operatively for dyspnoea and had bilateral chylous pleural effusion. Thoracic computed tomography with intravenous contrast identified a complete PLCVC, which was continuous with the left brachiocephalic vein and inserted into the right atrium, without any venous connection to the normal right cranial vena cava.[1] A thoracostomy tube was placed and the chylothorax self-resolved. Repeat echocardiogram eight weeks post-operative showed normal laminar trans-pulmonic flow and reversal of cardiac changes.

Relevance and novel information: It is hypothesised that an acute increase in hydrostatic venous pressure from transient obstruction of the PLCVC during retraction intra-operatively impeded thoracic duct emptying into the venous system. This in turn may have caused chyle leakage through afferent lymphatics resulting in chylothorax. It is unlikely PLCVC thrombosis was a cause given chylothorax was transient and the PLCVC was normal on CT; nor iatrogenic thoracic duct damage given the surgical approach was left-sided and the duct courses through the right.

References:

1. Choi SY, Song YM, Lee YW et al. Imaging characteristics of persistent left cranial vena cava incidentally diagnosed with computed tomography in dogs. *J Vet Med Sci* 2016;78:1601–1606.