

## CHYLOTHORAX IN A KITTEN

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### ABSTRACT

Chylothorax with collapse of the lungs was found on postmortem examination of a 2-week-old Siamese kitten. The chylothorax was probably due to a lack of continuity of the thoracic duct.

Key words: Chylothorax, cat.

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The characteristics of a chylothorax effusion are classically a milky white to pink, opaque fluid that does not produce a cleared supernatant upon centrifugation, has the mature lymphocyte as the main cell-type present, clears with ether at an alkaline pH and reacts positively to Sudan III and Oil Red O stains<sup>2 4 7 10-14</sup>. These characteristics are due mainly to the presence of chylomicrons from the intestinal lymph.

Reported causes of chylothorax in cats, include trauma (often associated with diaphragmatic hernias<sup>2 9</sup>), cardiomyopathy<sup>4 11</sup>, thymoma<sup>3</sup>, mediastinal lymphoma<sup>9</sup> and dirofilariasis<sup>5</sup>. When a ruptured thoracic duct can be demonstrated, as with direct or indirect trauma or by tumour erosion, the pathophysiology is easy to determine. In many cases of cardiomyopathies, some neoplasms and dirofilariasis, the duct is intact. In these cases the chylothorax is thought to occur due to an increase in thoracic duct pressure or due to an increase in venous pressure in the cranial vena cava, which results in a secondary increase in thoracic duct pressure<sup>2</sup>.

Congenital defects of the thoracic duct seen in man, include complete absence of the duct, fistulas between the duct and pleura, failure of the lymphatics to communicate and incomplete communication of the segmental components of the embryonic duct<sup>7</sup>. Chylothorax in very young animals is either rare or just never reported<sup>1</sup>. Congenital chylothorax i.e. chylothorax due to developmental defects of the thoracic duct itself is more rare.

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There has been one reported case of a 2-year-old Afghan hound presenting with chylothorax and abnormal terminations of the thoracic duct<sup>6</sup>. The only reported case of a thoracic duct defect in the cat, was in a one-year-old Siamese which presented with chylothorax due to a massive diverticulum of the thoracic duct<sup>8</sup>.

A 2-week-old pedigree Siamese kitten was presented for necropsy with a history of sudden death. A necropsy was performed and 5 ml of pink-tinged milky fluid was found in the thoracic cavity, the collapsed lungs were red in colour and had a rubbery consistency. On gross examination, no inflammatory changes of the pleura, dilatation of the thoracic duct or abnormalities of the thymus and heart were seen. Neither was there any indication of trauma to the thorax or to the rest of the body, and the diaphragm was intact. Attempts at introducing dye into the thoracic duct to check the patency, were unsuccessful. After staining with Sudan III, orange fat droplets were visible in the thoracic fluid and centrifugation of the fluid did not produce a cleared supernatant. Cytological examination of the fluid revealed that 95% of the cells were small mature lymphocytes, with solitary erythrocytes, neutrophils and activated macrophages making up the rest of the cell population. Smudged and lysed nuclear material was also observed.

Selected tissues were fixed in 10% buffered formalin and routinely processed for light microscopy. The only histopathological changes observed, were a marked pulmonary atelectasis and a mild periacinar lipid accumulation in the liver.

A diagnosis of chylothorax was made, based on the gross and microscopic findings, as well as on the results of the

laboratory tests performed on the thoracic fluid.

The case of chylothorax presented was probably due to a lack of continuity of the thoracic duct. This is based on the exclusion of the causes of chylothorax mentioned previously<sup>2-5 9 11</sup>.

Lack of continuity of the thoracic duct may either be a developmental defect or an acquired condition. The very young age of this kitten supports the possibility of this case being due to a developmental defect. Unfortunately chylothorax can result from minor chest trauma such as that which occurs with coughing or vomiting<sup>8</sup>, which makes it difficult to rule out trauma as a possible cause.

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