

Fluid colour sign on chest ultrasonography in a cat with exudate pleural effusion and pleuropneumonia

A 9-year-old neutered male exotic shorthair cat presented with a chronic cough of 3-month duration. Thoracic radiography revealed alveolar infiltration in the left cranial lung lobe, with an unstructured interstitial opacity in the other lung lobes; the differential diagnoses included pneumonia and neoplasia. On a CT scan obtained 10 days after radiography, a large volume of pleural effusion was identified, which was not apparent on the previous radiographs. Attenuation of the effusion varied between 20 and 40 Hounsfield units and was accompanied by strands of soft tissue attenuation and mild thickening of the costal parietal pleura (Fig. 1A). A first attempt at thoracocentesis through the left caudal thorax resulted in difficul-

ties in obtaining a sample. Thoracic ultrasonography revealed a complicated situation in the thorax, including pleural effusion containing echogenic strands, aerated lungs with irregular visceral pleura and multiple changes to the lung lobes such as atelectasis, partial and lobar consolidations. Homogeneous echogenic material (Fig. 1B) was identified in the ventral areas of the caudal left and right hemithoraces in areas where the CT had demonstrated fluid accumulation. Colour Doppler evaluation revealed homogeneous echoic regions positive for “fluid colour sign” (Fig. 1C), indicating complex, echogenic effusion instead of soft tissues, which allowed for guided aspiration of the pleural effusion. The pleural effusion was then drained. It was a milky-yellowish fluid that was categorised as an exudate (nucleated cell 275,990/ μ L, total protein 52 g/L). Pyothorax was tentatively suspected, but negative results were obtained from both aerobic and anaerobic bacterial cultures. Detection of feline coronavirus RNA and positive staining of viral nucleoprotein within macrophages in the effusion (Fig. 1D) led to the diagnosis of feline infectious peritonitis (FIP) virus-associated pleuropneumonia.

Effusive FIP with an extremely high total nucleated cell count that mimics septic exudate of pyothorax is uncommon but occasionally occurs. Chest ultrasonography is valuable to assess exudate pleural disease, and colour Doppler signals in the pleural fluid generated during respiratory and cardiac cycles can be used to discriminate complex effusion *versus* soft tissues in such cases and may give an indication of potential sites for thoracocentesis.

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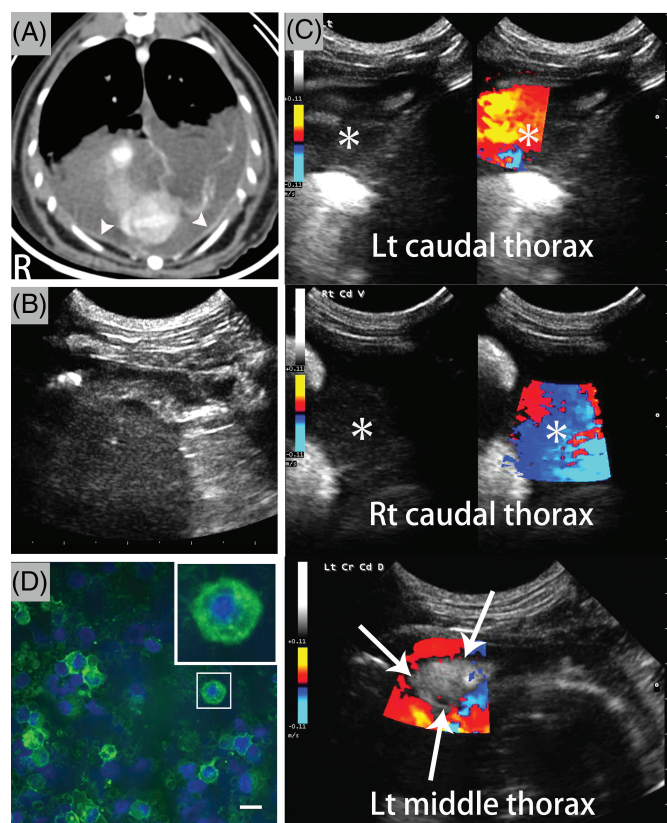


FIG 1. (A) Transverse, postcontrast CT image showing bilaterally accumulated pleural effusion and costal pleura thickening (arrowheads). (B) Ultrasound of caudal thorax showing homogeneous echogenic material. (C) The “fluid colour sign” in the pleural fluid helps to differentiate effusion (asterisk) from collapsed lung (arrows) or other solid tissues in the fluid. (D) Immunofluorescence antibody staining revealed cytoplasmic expression of feline coronavirus nucleoprotein (green) within macrophages (blue, the nucleus) in the pleural effusion. Bar = 20 μ m