

IMAGES IN SMALL ANIMAL PRACTICE

Multimodality diagnostic imaging findings in a dog with a traumatic pulmonary pseudocyst

A 3-year-old female entire whippet presented for non-ambulatory paraparesis, approximately 5 hours after an unwitnessed trauma. On examination, the dog had stable cardiovascular parameters and mild tachypnoea with normal thoracic auscultation. Neurological examination localised the lesion to the T3-L3 spinal cord segments.

A non-contrast CT confirmed a T12-L3 subluxation with multiple small vertebral chip fractures and bilateral pneumothorax. In the cranioventral aspect of the right caudal lung lobe was a well-defined thin walled structure, approximately 67 mm × 40 mm × 54 mm, containing dependent homogeneous fluid consistent with haemorrhage (50HU) and a small gas cap, diagnosed as a traumatic pulmonary pseudocyst (TPP). There were also multiple pulmonary contusions (Fig 1A). In addition to the T12-L3 subluxation, MRI demonstrated an acute non-compressive nucleus pulposus extrusion at the T12-L3 intervertebral disk space. Radiography showed a round, soft tissue opacity superimposed over the caudal vena cava and diaphragmatic outline in the ventral aspect of the right caudal lung lobe (Fig 1B, C). Point of care ultrasound (POCUS) demonstrated a

hypoechoic pulmonary mass containing a moderate amount of gas (Fig 1D).

Sequential thoracic ultrasound examinations over 16 days demonstrated resolution of the TPP gas, with otherwise static dimensions (Fig 1D-G). The persistence of the TPP 2 weeks post trauma suggests resolution of TPPs takes weeks to months, as is the case in people.

The pneumothorax spontaneously resolved (with resolution of the tachypnoea) and the patient was ambulatory after 2 months of conservative treatment. No clear clinical signs attributable to the TPP were identified.

CT is likely the most sensitive modality for diagnosing TPPs but, where an acoustic window to the body wall exists, thoracic POCUS can be used for diagnostic and monitoring purposes. In the absence of CT, POCUS can accurately evaluate what on plain radiographs appear only as soft tissue opacities. Differentiating TPPs from other pulmonary nodular diseases, such as neoplasia and abscessation, avoids unnecessary invasive procedures which could negatively impact the patient. The thin wall and initial lack of soft tissue organisation, compartmentalisation or heterogeneity

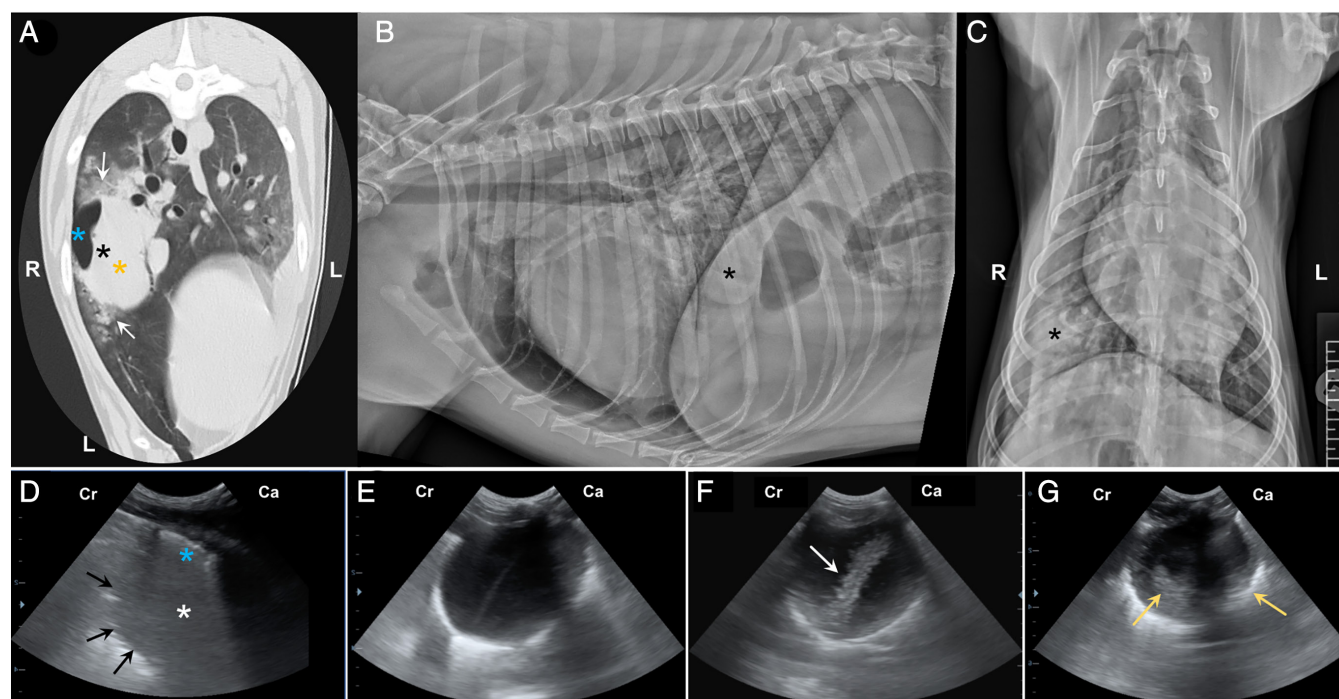


FIG 1. Transverse CT lung window at the level of intercostal space 7 (A), left lateral and dorsoventral radiographs (B and C), transcostal sonograms at the level of the 7th intercostal space on day 1 (D), 4 (E), 7 (F) and 16 (G). The CT image was acquired with the patient in left lateral recumbency but for ease of viewing has been rotated 90°. TPP (black asterisk), with haemorrhage (yellow asterisk) and gas (blue asterisk). Multifocal regions of ground glass opacity to consolidation were suspected to be contusions (white arrows). Radiographs highlight the TPP as a round soft tissue opacity in the right caudal lung lobe (black asterisk). POCUS on day 1 revealed a hypoechoic pulmonary mass (black arrows) containing a bright interface (blue asterisk) with dirty acoustic shadowing (white asterisk) consistent with intralesional gas. The gas cap had resolved by day 4. There is a gradual increase in the echogenicity of the material within the TPP consistent with thickening of fibrous strands (white arrow) and peripheral organisation of the haematoma (yellow arrow) (E-G)

made abscessation and neoplasia unlikely differentials. Complications of TPP management in people are rare but include infection, pneumothorax and ongoing bleeding.

- Ultrasound (DP-50Vet, Mindray Digital Ultrasonic Imaging System, Shenzhen, China)
- Radiography (Toshiba Rotanode, Tochigi, Japan)

SOURCES OF SUPPORT

Equipments

- MRI (1.5 T Intera, Philips Medical Systems, Eindhoven, the Netherlands)
- CT [320-slice CT scanner (Canon Medical Systems, Aquilion ONE Genesis Edition, Tochigi, Japan)]

S. MELLA ^{1,*}, C. WHITE^{*}, E. K. MAPLETOFT^{*},
F. LLABRES-DIAZ ^{*} AND S. D. COOK ^{*}

^{*}Queen Mother Hospital for Animals, The Royal Veterinary College, Hawkshead Lane, North Mymms, Hatfield, Hertfordshire AL9 7TA, UK

¹Corresponding author email: smella@rvc.ac.uk