Case Notes: Spontaneous pneumothorax in a dog

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It’s the end of the weekend shift when Jazz, a three-year-old Belgian shepherd dog, is presented to you with breathing difficulties.

Figure 1. Left lateral thoracic radiograph showing bilateral pneumothorax.

Jazz had been seen by your colleague the previous day for sudden onset of lethargy, inappetence and mild pyrexia. Blood tests had been unremarkable, and antibiotic and NSAID therapy had been initiated.

The owner reported Jazz had an episode of coughing a week earlier after playing in the garden, which had resolved after a few minutes. On examination, Jazz exhibited marked dyspnoea, with a respiratory rate of 60 breaths per minute. Chest radiographs revealed bilateral pneumothorax (Figure 1).

Question

How would you establish the cause of the pneumothorax, and what would be your treatment plan?

Answer
Given the absence of any significant trauma, spontaneous pneumothorax should be considered. Primary spontaneous pneumothorax usually results from rupture of lung blebs or bullae. Secondary pneumothorax can result from underlying pulmonary disease such as pneumonia, abscessation, fungal granuloma, parasitism, neoplasia or foreign body migration.

![CT scan showing focal bronchopneumonia of right caudal lung lobe and air in the pleural space.](image)

**Figure 2.** CT scan showing focal bronchopneumonia of right caudal lung lobe and air in the pleural space.

Aspiration of air by thoracocentesis is diagnostic for pneumothorax. Post-aspiration radiographs should be carefully evaluated for evidence of underlying pulmonary parenchymal or other thoracic diseases such as neoplasia. Pulmonary bullae and blebs are difficult to identify radiographically and therefore CT is preferred. Laboratory tests could include heartworm testing and faecal flotation for lungworm.

The initial treatment aim is to stabilise the patient and, therefore, thoracocentesis should be performed immediately if dyspnoea is present. Precise technique and asepsis are crucial to minimise iatrogenic complications. Placement of a thoracostomy tube should be considered in patients requiring more than two needle thoracocentesis within a six to 12-hour period.

If possible, constant negative pressure should be applied to the pleural space, using a continuous suction device. In almost all cases of canine spontaneous pneumothorax, surgical exploration of the thorax is recommended – this gives a higher survival rate and decreased recurrence compared to conservative management. Patients with bacterial or fungal pneumonia or ruptured pulmonary abscesses may require lung lobectomy, and have been reported to have high mortality rates. In contrast to dogs, cats can have pneumothorax resulting from asthma and small airway obstruction
– these cases may have good outcomes when treated conservatively.

In this case, a CT scan showed a lesion affecting the right caudal lung lobe (Figure 2) suggestive of a migrating foreign body. Exploratory thoracotomy revealed a 2mm puncture and atelectasis of the right caudal lung lobe. No foreign body was found. A right caudal lung lobectomy was performed. Histopathology confirmed pleuritis and active pulmonary inflammation. This was not aetiologically specific, but a foreign body reaction was suspected.

The dog recovered uneventfully following surgery.