

Short communication

BACTERIAL DEFENSE MECHANISM OF THE PLEURAL LUNG CURTAIN IN A DROMEDARY CAMEL

U Wernery, J Kinne, Christiana Hebel and Marina Joseph

Central Veterinary Research Laboratory, Dubai, UAE

ABSTRACT

A severe overwhelming coccal infection of the lung curtain of an adult dromedary camel led to pneumonia after the lung's defense mechanisms collapsed. This structure is not seen in common domestic animals and very little has been written about this curtain. Some scientists referred to them as "fringes" or "extensions", little is known about these enigmatic structures. Present report describes herewith a severe haemorrhagic and lymphoblastic coccal infection of the lung curtain, leading to pneumonia.

Key words: Dromedary camel, lung curtain, phagocytic cells, visceral pleura

A severe overwhelming coccal infection of the lung curtain of an adult dromedary camel led to pneumonia after the lung's defense mechanisms collapsed.

The pleural lung curtain is a defense structure that protects the lungs from infection. Described as a specific camelid feature, it has also been observed in the giraffe, another species with a long neck (Anat Rec, 293: 1776 - 1786). This structure is not seen in common domestic animals and very little has been written about this curtain. Although these structures were noted by Al-Tarazi (2001) and Al-Hamad and Khamas (2002), who referred to them as "fringes" or "extensions", little is known about them and the descriptions by these authors were somewhat superficial. Serious investigations, however were undertaken by Buzzell *et al* (2010) using light and electron microscopy to gain some insight into the functions of these enigmatic structures. The authors describe herewith a severe haemorrhagic and lymphoblastic coccal infection of the lung curtain, leading to pneumonia.

Materials and Methods

An adult female dromedary camel was admitted to the Dubai Camel Hospital at the beginning of December 2025 with high fever, complete anorexia and high white blood cell count. Despite treatment, it died 3 days later and was sent to the Central

Veterinary Research Laboratory for necropsy. The camel weighed 451 kg and was in fresh and good condition.

Pathology

The camel was dissected at CVRL, where gross pathology alterations were recorded and samples for histology and microbiology were taken from each organ and tested using routine methods.

Results

The lung showed a severe diffuse pulmonary emphysema, severe oedema and consolidation of both lobes. Additionally, both lobes displayed multifocal to coalescing white nodules, measuring 3 to 4 mm in diameter and exhibiting a firm appearance. Histologically, numerous peribronchiolar and perivascular lymphoblastic infiltrates were observed, corresponding to the white nodules seen in gross pathology.

The lung curtain was enlarged and severely haemorrhagic (Fig 1). For comparison, lung curtain of a healthy adult dromedary camel is shown in Fig 2.

Discussion

Pneumonia in adult dromedaries is rare. When it occurs, it is usually in conjunction with systemic disease rather than as an independent illness, and it primarily affects young dromedaries (Wernery

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Fig 1. Severely thickened and haemorrhagic lung curtain caused by *Streptococcus faecalis* infection.

et al, 2014). The pleural lung curtain is a defence structure that protects the lung from infection, which may be the main reason adult dromedary camels and giraffes rarely develop pneumonia (Letzner, 1987). The position of the pleural curtain in the costophrenic recess, combined with the presence of multiple perivascular lymphoblastic infiltrates and phagocytic cells, suggests that the pleural curtain stirs, samples and cleans the pleural fluid during inhalation and exhalation. It acts much like a “windscreen wiper”. However, when the curtain defence mechanism is overwhelmed - as in this rare case by a barrage of *Streptococcus faecalis* - the systems collapse. This is evidenced by the thickening and haemorrhagic state of the pleural curtain. In this case, the bacteria successfully entered the lung, leading to the development of emphysema and oedema. Both lung lobes contained multifocal to coalescing white, firm nodules (lymphoblastic infiltrates), which were also observed in the lung curtain. *Streptococcus faecalis* was isolated from the lung tissue in high numbers.

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Fig 2. Dromedary camel lung, showing the pleural curtain along the basal lung margins of a healthy camel.

Ethical Statement

This study was done according to the approval of Ethical Committee of CVRL, Dubai.

Data Availability

The data generated during the study can be requested from the corresponding author.

Conflict of Interest

The authors declare no conflict of interest.

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