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DROMEDARY MASTITIS CAUSED BY *Clostridium septicum:* A CASE REPORT

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A dromedary camel in lactation which previously had delivered a healthy baby, died suddenly. It showed classical lesions caused by *Clostridium septicum* including oedematous mastitis.

Clostridium (C.) septicum causes malignant oedema, which is an acute, generally fatal toxaemia affecting all species and ages of animals. The disease occurs worldwide and is often found in connection with other anaerobes like *C. chauvoei, C. novyi, C. perfringens* and *C. sordellii. C. septicum* is found in soil and intestinal contents of animals.

Predisposing factors like wounds, parturition, shearing, docking, castration may activate the dormant spores and subsequently disease may develop within 6 to 12 hours as fast replication of the pathogen occurs releasing its exotoxins. These toxins cause local and systemic pathological signs which include inflammation, oedema, necrosis and gangrene. *C. septicum* can also cause braxy in sheep, a highly fatal infection characterised by toxaemia and inflammation of the abomasal wall. Literature on malignant oedema in Old World Camels (OWC) is scarce. However, malignant oedema is an economically important disease in alpacas in Peru and has also been associated with rattle snake bites in llamas in Colorado (Wernery *et al,* 2014).

Fig 1. Oedematous udder in lactation caused by *C. septicum.*

We describe here a *C. septicum* mastitis followed by sudden death of a lactating dromedary.

Materials and Methods and Results

An adult dromedary carcass with a history of sudden death was submitted for necropsy to CVRL. It showed massive swelling of the udder (Fig 1). It was treated with antibiotics but died 6 hours later.

Autopsy

Autopsy of the female camel in good condition (714 kg) revealed swollen haemorrhagic left quarters and right back quarter and pale right front quarter. The mammary lymph nodes were enlarged, with the left mammary lymph node showing haemorrhages. Subacute suppurative to necrotising mastitis with lot of bacteria was observed in histology.

Udder tissues from all 4 quarters, mammary lymph nodes, lung, liver and intestines were examined bacteriologically using routine methods including anaerobic incubation of blood agar-based Zeissler agar with selective supplement (SR0093E, Oxoid) for 18 hours at 37˚C. Heavy growth of *C. septicum* was found in all 4 mammary gland tissues, udder lymphnodes, liver and lung. Additionally, *C. perfringens* was isolated from the small intestines in high numbers and confirmed as an alpha toxin producer by an ELISA from BIO X Diagnostics, Belgium. *C. septicum* showed a typical growth pattern on Zeissler agar with swarming, beta haemolysis and stringent odour. Subculture were made and identification were carried out by Gram stain and using Vitek ANC anaerobe cards (Biomérieux 21347). However, it should be mentioned that differentiation between *C. septicum* and *C. chauvoei* is difficult. Toxins from both are antigenically identical (El Idrissi and Ward, 2010).

Discussion

C. septicum may penetrate the body through wounds and scratches contaminated with soil or through the digestive tract mucosa. Anaerobes are

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