Caseous lymphadenitis caused by *Corynebacterium ulcerans* in the dromedary camel

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Abstract — Caseous lymphadenitis that affected the dorsal and ventral superficial lymph nodes in the left cervicothoracic region of a young dromedary camel is described. The agent isolated was *Corynebacterium ulcerans*. To our knowledge, this is the first description of purulent lymphadenitis caused by *C. ulcerans* in a species belonging to the Camelidae.

Résumé — Lymphadénite caséeuse causée par *Corynebacterium ulcerans* chez un dromadaire. L'article décrit une lymphadénite caséeuse affectant les ganglions lymphatiques superficiels aux niveau dorsal et ventral de a région cervicothoracique gauche d'un jeune dromadaire. *Corynebacterium ulcerans* a été l'agent isolé. À notre connaissance, il s'agit de a première description de lymphadénite purulente causée par *C. ulcerans* chez une espèce appartenant aux camélidés.

(Traduit par docteur André Blouin)

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An 11-month-old, male dromedary was presented for examination of a ganglionar enlargement that affected the dorsal and ventral superficial lymph nodes in the left cervicothoracic region. The animal was from a herd of 48 dromedaries (31 females and 17 males). According to the owner, similar lesions were frequent in young animals of the herd. The lymph nodes were aspirated aseptically and a thick, viscous fluid and cream-white material were recovered. These samples were cultured on sheep blood agar and incubated under aerobic conditions with increased CO_2 concentration. Colonies were barely apparent at 24 h; by 48 h, white, creamy, umbonate colonies had developed. Gram staining of the colonies revealed pleomorphic, gram-positive, non-sporulated, curved rods, irregularly grouped. The bacteria were nonmotile, catalase- and urease-positive, and pyrazinamidase-negative. They did not reduce nitrate to nitrite. The bacteria fermented glucose, maltose, trehalose, and soluble starch, but not salicin, mannitol, or xylose. A phospholipase D test was positive. Gelatine hydrolysis was positive at 25°C but negative at 37°C.

Identification of the isolated bacterium was based upon morphology, cultural characterization, and biochemical reactions. It was differentiated from *Actinomyces pyogenes*, because *A. pyogenes* is catalase- and urease-negative. Among the corynebacteria, only *C. pseudotuberculosis*, *C. diphtheriae*, and *C. ulcerans* are pyrazinamidase-negative; however, of these, only *C. pseudotuberculosis* and *C. ulcerans* are urease- and phospholipase D-positive. *Corynebacterium ulcerans* ferments trehalose and soluble starch, while *C. pseudotuberculosis* fails to do so. Accordingly, the bacterium isolated was *C. ulcerans*.

Antibiotic susceptibility tests were made by the disk diffusion method in blood agar. *Corynebacterium ulcerans* was resistant to oxacillin and susceptible to gentamicin, cephalothin, penicillin G, clindamycin, erythromycin, rifampicin, ampicillin, tetracycline, cefotaxime, vancomycin, sulfamethoxazole-trimethoprim, and ciprofloxacin.

Caseous lymphadenitis in the dromedary, as seen in sheep and goats, is produced by *Corynebacterium pseudotuberculosis*, a common disease affecting the camel in many countries in the world (1). In samples from these abscesses, it is common to isolate, in addition to *C. pseudotuberculosis*, *C. renale*, *Streptococcus* spp. (Lancefield B group), and *Staphylococcus* spp. (2). Radwan et al (3) isolated *Staphylococcus aureus*, *Rhodococcus equi*, *Shigella* spp., and *Escherichia coli* in similar cases. Other outbreaks of pseudotuberculosis in Bactrian camels have been associated with *Histoplasma farciminosum* (4).

To our knowledge, caseous lymphadenitis caused by *C. ulcerans* in a camelid has not been reported in the veterinary literature. Equally, it seems important that other bacteria associated with lymphadenopathies were not isolated in this study. On the other hand, the age of the animal (11 mo) is not in accordance with caseous lymphadenitis in camels caused by *C. pseudotuberculosis*, which occurs in animals over 3 y of age (Schwartz and Dioli, 1992, cited in reference 1).

Corynebacterium ulcerans causes infection of the bovine udder, with intermittent excretion of the organism in the milk (5). Human infections vary from symptomless to diphtheria-like and are usually associated with the consumption of raw milk (6). *Corynebacterium ulcerans* has also been isolated from bite wounds and cervical abscesses in monkeys (7) and from numerous cases of gangrenous dermatitis in captured ground squirrels (8). CVJ

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