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Diagnostic and therapeutic management of clinical case of suppurative pre-scapular lymphadenitis in a bull

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Abstract

A 4 year old Jersey-Friesian cross bull was presented to the Universiti Veterinary hospital, Universiti Putra Malaysia with a ruptured abscess on the right pre-scapular lymph node. The wound was dressed with diluted Hibiscrub® (Chlorhexidine gluconate 4.0%) and povidone iodine. Initial treatment includes Penicillin Streptomycin at 16mg/kg, intramuscularly. Bacterial isolation and sensitivity results revealed the presence of *Staphylococcus shleiferi* spp *shleiferi* and *Arcanobacterium pyogenes*. Both were resistant to gentamycin, penicillin G, sulfazole and streptomycin, but susceptible to tetracycline. The treatment was substituted with oxytetracycline 9mg/kg for 3 days based on the antibiotic susceptibility result. The wound was monitored and observed to have completely healed after 10 days post treatment.

Keywords: Lymphadenitis, Arcanobacterium, Staphylococcus, antibiotic sensitivity, bacterial isolation

Introduction

Arcanobacterium pyogenes is an opportunistic pathogen that causes suppurative infections in different organs of the body. Infections usually arise after damage to mucous membranes resulting from physical trauma, immune reaction or microbial infections. *Arcanobacterium pyogenes* causes suppurative infections which result in the formation of abscesses, empyemas, and pyogranulomas, often in conjunction with other bacterial populations [1]. Since *A. pyogenes* commonly exists as a normal commensal microflora in livestock species such as cattle, sheep and goat, the incidence of disease is sporadic and depends on the presence of precipitating stresses or physical damage [1]. *A. pyogenes* can cause severe mastitis in cows, with bacteria invading the mammary glands via injured teats from contaminated milking equipment [1,2]. Our previous report has shown clinical mastitis associated with *Arcanobacterium spp* in a goat [3].

Lymphadenitis is an inflammation of the lymph nodes. It is characterized by swelling, pain and exudation in suppurative cases. Lymphadenitis is usually localized to lymph nodes around the region of injury and is caused by bacterial and fungal organisms which include *Corynebacterium spp*, *Rhodococcus spp*, *Listeria spp*, *Absidia corymbifera*, *Candida spp*, *Aspergillus spp* [4, 5]. Based on literature search, there is paucity of information on lymphadenitis associated with *A. pyogenes* in cattle. In this case, we report the clinical presentation, diagnosis and management of lymphadenitis associated with *A. pyogenes* in a bull.

Case History and Clinical Examination

A 4 year old Jersey cross bull weighing about 450kg was presented to the Universiti Veterinary hospital, Universiti Putra Malaysia with a complaint of a swelling on the lateral side of the right forelimb, above the brisket for the past one week. The abscess eventually ruptured a day before it was presented to the hospital. Examination revealed that the abscess formed in the right pre-scapular lymph nodes. The bull had a good body condition score (4/5), with a temperature of 38 °C, pulse of 56 bpm and respiration at 32 cycles/min. A sample of the pus was collected aseptically with a sterile swab and sent for bacterial isolation and identification, and antibiotic sensitivity.

Results

Bacterial isolation revealed the presence of *Staphylococcus shleiferi* spp *shleiferi* and *Arcanobacterium pyogenes*. Both isolated bacteria were resistant to gentamycin, penicillin G, sulfazole and streptomycin. However, both isolates were susceptible to tetracycline.

Treatment and Discussion

The wound was cleaned with diluted Hibiscrub® containing Chlorhexidine gluconate 4.0% (BCM Ltd, Nottingham, U.K) and povidone iodine before spraying with Woundsarex® containing Cyphenothrin 0.6% w/w and Halogen Reflux: 99.4% (YAU Enterprise Sdn Bhd, Malaysia). Initial treatment was instituted by giving Penicillin Streptomycin (Norbrook, Northern Ireland) at 16mg/kg, intramuscularly. After the antibiotic sensitivity results, this was substituted with Oxytetracycline 9mg/kg for 3 days after the bacterial sensitivity test revealed that Penicillin Streptomycin was ineffective. The wound was monitored and observed to be healing after 3 days post treatment, complete healing was observed after 10 days post treatment. In this case, management of suppurative lymphadenitis due to *A. pyogenes* was reported in a bull. Lymphadenitis due to bacterial infection has been previously reported in farm animals. However, the most common cause of lymphadenitis in small ruminants is *Corynebacterium pseudotuberculosis* [6, 7]. The organism causes formation of caseous centers in the lymph nodes of the head, limbs and inguinal region [8]. In cattle, bacterial and fungal organisms have been commonly incriminated in lymphadenitis cases [4, 5]. In some case, fatalities were reported once visceral enteric lymph nodes were involved in listeriosis [9]. In this case, bacterial isolation from the pus revealed two bacterial species with *A. pyogenes* being the presumptive pus forming pathogen. Although *A. pyogenes* is known as a commensal microbe and exist in most hosts, cases of lymphadenitis due to the bacteria are scarce in literature, thus making this one of the first reports in Malaysia. Bacterial resistance is one of the most important factors that limit the success of the treatment in suppurative inflammations. In this case, the antibiotic susceptibility testing showed resistance to gentamycin, penicillin G, sulfazole and streptomycin, while there was a susceptibility to tetracycline. In a previous study involving *A. pyogenes* isolates from cattle and pigs, the isolates from cattle showed less resistance to gentamycin, penicillin G and streptomycin, with Benzylpenicillin and ampicillin being the most active antibiotics [10]. Similarly, another study using *A. pyogenes* isolate from cases of bovine endometritis found all isolates to be highly sensitive to fluoroquinolones (100%), macrolides (81.2 to 100%) and florfenicol (90.6%), aminoglycosides (15.6 to 81.2%), and tetracyclines (43.7 to 68.7%). However, 53.1% were resistant to clindamycin, 50 to 65.6% were resistant to penicillin, and 37.5 to 71.9% were resistant to cephalosporins. All isolates were resistant to sulfonamides and bacitracin zinc [11]. In conclusion, this study has shown the importance of bacterial isolation and sensitivity in the treatment of a case of suppurative lymphadenitis caused by *A. pyogenes*. The success of antibiotic therapy depends on the susceptibility of the causative bacteria to treatment used.

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