

Caseous Lymphadenitis in a Goat: A Case Report

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Summary

Despite the sero-positivity of caseous lymphadenitis (CLA) in Malaysian farms, cases with clinical signs of CLA are rarely encountered in the rotation of veterinary practices. We report here a case of 8-month-old Saanen breed of goat with several related cases in the same populations. The case had a history of a subcutaneous mass beneath the jaw, cranial and distal to the pre-scapular lymph node on the right side. The consistency of the mass was non-movable, solid and hard on deep palpation. There was alopecia of the enlarged site. The vital signs were normal and the body score was 2.5/5. Three goats in the herd were presented with similar clinical signs. Affected goats, with unknown records of vaccination and deworming status were separated from the rest of the herd. A tentative diagnosis of caseous lymphadenitis (CLA) was made based on the characteristic of the lesions presented and its contagious nature. The purulent aspirate submitted to the laboratory for bacterial culture showed growth of *Corynebacterium pseudotuberculosis*. Agar gel precipitation test (AGPT) confirmed positive for *Corynebacterium pseudotuberculosis*. The mass was lanced and routine wound flushing was done. Continuous monitoring of the goats was instituted. In conclusion, practitioners should include AGPT test in their routine diagnostic procedures for the identification of subclinical cases of CLA.

Keywords: Caseous lymphadenitis, *Corynebacterium pseudotuberculosis*, contagious, subclinical, AGPT.

Introduction

Animal farms can be a home to many infectious diseases. They appear either in the form of clinical infection, producing characteristic signs or sub-clinical form, without apparent signs. All of which is true in the case of caseous lymphadenitis (CLA); a chronic contagious disease of sheep-goat populations worldwide (Windsor, 2011).

The disease has considerable economic consequences which can be attributed to both direct and indirect costs. The direct effects of CLA include loss of fertility, loss of draught power, retardation of growth, gradual emaciation and condemnation of carcasses, while indirect losses can be attributed to the disruption in trade of animals and derivative products (Williamson, 2001).

CLA is caused by a bacterium known as *Corynebacterium pseudotuberculosis*. It is a gram positive, rod shaped, facultative intracellular bacteria (Dorella *et al.*, 2006). The organism can survive up to 8 month in soil and 2 month in wood and straw (Brown and Olander, 1987). The incubation period is 2-4 month (Malone *et. al.*, 2006). The pathogenicity of *C. Pseudotuberculosis* involves the exotoxin phospholipase D (PLD) and a mycolic acid surface lipid (Baird and Fontaine, 2007). The exotoxin PLD acts by damaging the endothelial cells and increasing vascular permeability (Baird and Fontaine, 2007; Windsor, 2011). Mycolic acid is the external lipid coat which provides protection from hydrolytic enzymes of the phagocytes (Fontaine and Baird, 2008). The entry to the host is mainly through non-intact skin such as open wounds and abrasions (Fontaine and Baird, 2008) and also mucous membrane (Windsor, 2011). However, other routes have been described in detail by Jesse *et al.* (2013) and Adza Rina *et al.* (2013).

Transmission occurs from environmental contamination by rupture of superficial abscess of infected animals. Subsequently, the organism migrates within the phagocytes to the local lymph nodes and internal organs, causing inflammatory reactions. Repeated cycles of bacterial replication, followed by necrosis, subsequent death of inflammatory cells forms the characteristic of abscess of superficial lymph nodes to which the disease is clinically characterized (Windsor, 2011). Formation of abscess in visceral organs may occasionally occur. In some cases, both of the forms, internal and external, can co-exist. The global eradication of CLA became challenging as a result of several factors which include poor response to therapeutics, the ability to persist in the environment and the limitations in detecting sub-clinically affected animals (Michael and Douglas, 1998).

Case report

History

An eight month old female Saanen breed goat was presented for evaluation of large subcutaneous mass beneath the jaw, cranial and distal to the pre-scapular lymph node on the right side. Vaccination and deworming status was unknown. Two weeks prior the visit, the owner noticed 4 out of 60 goats in the herd had mass growing around the submandibular distal to pre-scapular region. There was no history of trauma, injection or other potential inciting cause for development of the mass. The affected ones were isolated from the

rest of the herd. The farm was designed as a dairy goat farm producing milk commercially for only local consumption.

Clinical Findings

Physical examination reveals vital organ parameters were within normal range. Body condition score was 2.5/5. There was enlargement of the right submandibular lymph node. The site of enlargement was alopecic; the consistency was non-movable, solid and hard. Despite the clinical lesions, the goat's appetite, bowel and urination were normal. The same observation was recorded in the other three goats with similarity in terms of clinical lesions was evident.

Diagnosis

A tentative diagnosis of caseous lymphadenitis was made based on the history and characteristic of the lesions. Other differential diagnosis such as granuloma, neoplasia, hematoma and cyst were unlikely since four goats in the farm showed similar clinical signs. It is more likely a characteristic of a contagious disease. The area was aseptically prepared and a 21-gauge, 3.0-cm over-the needle catheter inserted into the mass; 2 mL of purulent exudate was aspirated and submitted for bacteria cultures. Microscopic examination of the Gram-stained smear revealed the presence of Gram-positive pleomorphic rods. Bacterial culture results revealed growth of *Corynebacterium pseudotuberculosis*. Thus, this further supports the possible explanation that these animals might have incubated the disease previously.

Treatment

Management of the case involved establishing drainage and instituting daily lavage of the abscess with diluted hibiscrub (chlorhexidine) and iodine solution. Orospray (sulphanilamide, chlortetracycline) was applied on the lesion as a topical antibiotic. Wound sarex was finally applied around the lesion for the purpose of avoiding environmental contamination and insect agitation.

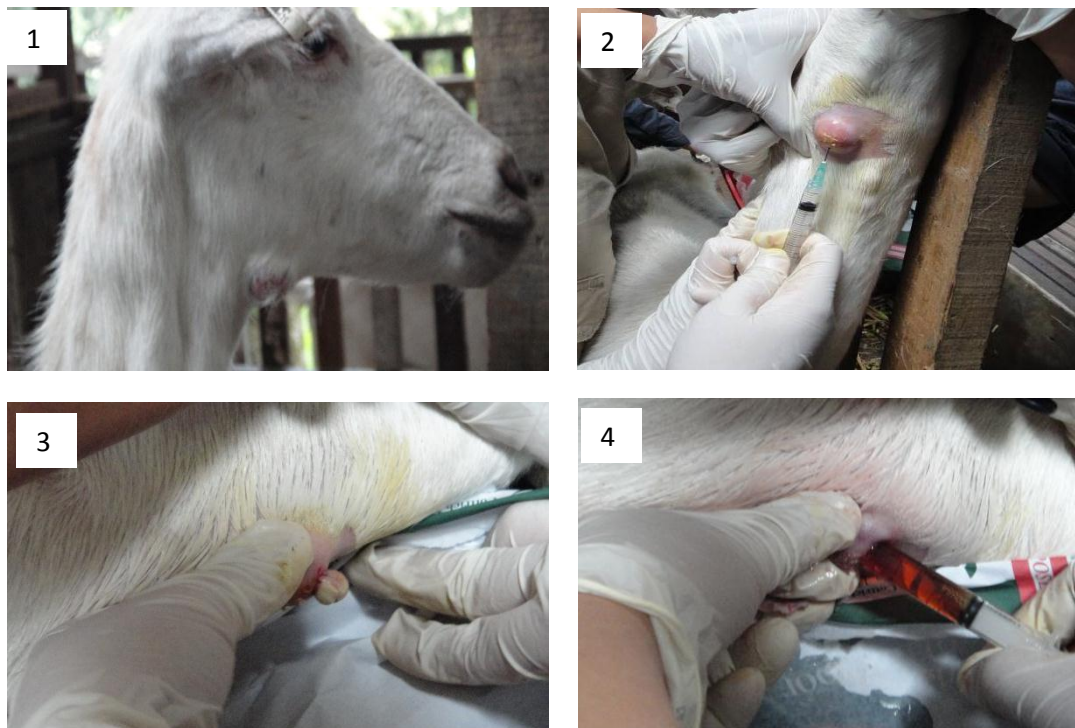


Figure 1-4: Right submandibular enlargement in a goat. (1) Patient 474 with right submandibular lymph node enlargement. The site of enlargement was alopecic; the consistency was non-movable, solid and hard. (2) purulent exudate aspiration shows thick caseous material content. (3) Lancing of the mass resulted removal of thick caseous material. (4) Cleaning of the site using diluted hibiscrub and diluted povidone iodine.

Discussion

Abscessation caused by *C. pseudotuberculosis* in small ruminant flocks most commonly involves the superficial lymph nodes presenting signs of relatively typical to other diseases whose agents cause subcutaneous infections. In most of the reported cases, the animals develop swelling and abscessation of the superficial lymph nodes followed by rupture and drainage of purulent material. Moreover, abscessation involving other soft tissues has been reported. The latter is recognized as an internal form of CLA infection in which most of vital organs develop abscessation (Abdinasir *et al.*, 2012). In many of the reported cases, the abscesses developed slowly over a period of several weeks (Abdinasir *et al.*, 2012). CLA causes progressive emaciation in animals (Al-Gabaary *et al.* (2009); Al-Gabaary and El-Sheikh, 2001).

To date, several studies specifically highlighted a new dynamics of CLA transmission. Most of which was discussed in detail by Jesse *et al.* 2013 and Adza Rina *et al.* (2013). In Malaysia, the decision to cull or treat affected animals depends upon the criteria legislated by Department of Veterinary Services (DVS, 2011). However, in this case, the animal was not culled since the body score was still good enough without the presence of anorexia.

Animals with poor body score (less than 2) without clinical signs of CLA and positive upon agar gel immunodiffusion test (AGID) are culled (DVS, 2011).

Treatment of abscesses caused by *C. Pseudotuberculosis* in any location is likely to follow the same basic principles as for the management of soft-tissue abscesses caused by group C streptococci and other Gram-positive bacterial

species. The successful treatment in most cases has involved drainage and lavage of the abscess in combination with antimicrobial therapy including penicillin, doxycycline, trimethoprim-sulfonamide or a combination of these (Beck et al., 2011). However, *in vivo*, the encapsulated abscess characterized by CLA infections limits the penetration and effectiveness of (systemic) antibiotics (Williamson, 2001). Therefore, recurrence of the disease even after removal of abscess is more likely to occur. In addition, presences of internal abscesses are also a major constraint for effective therapy (Dorella et al., 2006). Control and prevention is the key to prevent spread of the disease.

Conclusion

This case emphasises the need for practitioners to be aware of the current status of CLA in Malaysian animal farms and the usefulness of pursuing bacterial culture and AGPT to rapidly diagnose the agent, and to warn owners of the possibility of prolonged treatment and recurrence.

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Conflict of interest

The authors declare that they have no conflict of interest with the contents of this paper in any respect

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