

# Observations on an *Actinomyces pyogenes* Infection in a Goat

S.O. Akpavie<sup>1</sup> B.O. Emikpe<sup>1</sup>

## Key words

Goat - *Actinomyces pyogenes* - Abscess - Nigeria.

## Summary

*Actinomyces pyogenes* was isolated in a case of visceral abscessation involving the lungs and the liver in a goat.

## ■ INTRODUCTION

*Actinomyces pyogenes* is a common cause of various animal diseases such as summer mastitis, endometritis, liver and foot abscesses, endocarditis, chronic nonsuppurative pneumonia and suppurative arthritis especially in sheep and cattle (4, 7). In humans, it has been associated with leg ulcers (6).

There are reports of *Corynebacterium pseudotuberculosis* causing caseous lymphadenitis in goats and sheep (1, 8, 9), but there is paucity of information on the disease caused by *Actinomyces pyogenes* in small ruminants. This communication reports a case of multiple visceral abscesses caused by *Actinomyces pyogenes* in a local Red Sokoto goat in Nigeria.

## ■ MATERIALS AND METHODS

In Ibadan, Oyo State of Nigeria, 100 female Red Sokoto goats aged 1-3 years were purchased from Sokoto environs and 15 female West African Dwarf goats were purchased locally for cross-breeding by a livestock farm. The animals were grazed on *Panicum maximum* pasture and fed with commercial concentrate.

One of the offspring from this flock, a six-month-old male, pure Red Sokoto goat, was noticed to be lean, unthrifty and dull. It was routinely dewormed with Levamisole<sup>®</sup> and placed on oxytetracycline for three days but was found dead on pasture on the third day. Postmortem examination was carried out on the carcass and tissues were obtained for histopathology and microbiology.

At postmortem, the carcass was very lean and the lungs showed grayish white nodules of about 1-4 mm in diameter scattered throughout the lungs. The liver also had similar multiple grayish white raised nodules scattered throughout its parenchyma (Figure 1).

Specimens from the liver and the lungs were fixed in 10% buffered formalin processed routinely for histopathology and stained with hematoxylin and eosin. Special staining was performed with Brown and Brien and Ziehl Neelsen stains.

Cultures of lung and liver nodules were made by direct inoculation into blood agar and incubated at 37°C for 48 h.



**Figure 1:** Goat liver showing numerous circumscribed grayish nodules of different sizes.

1. Department of Veterinary Pathology, University of Ibadan, Ibadan, Nigeria

## ■ RESULTS

Histological examination of tissues revealed the multiple nodules in the lungs and the liver to be areas of necrosis and marked neutrophilic and macrophage infiltrates surrounded by fibrous connective tissues. In the lungs, the adjacent alveoli were collapsed.

A pure culture of *Actinomyces pyogenes* was obtained on blood agar. The colonies and biochemical characteristics of the organism were as described by Carter *et al.* (4) and Cowan and Steel (5).

## ■ DISCUSSION

*Actinomyces pyogenes* infection in the goat was associated with marked cachexia as described by Frazer *et al.* (7). The visceral abscesses observed in this case were quite numerous and different from the dilation of blood vessels and emphysema recorded in the experimental infection in mice by Atef *et al.* (3). The mild lesions of *Actinomyces pyogenes* in mice, as inferred by Wilson and Miles (10), may be due to the fact that mice are quite resistant to this disease.

According to Atef *et al.* (3), cephaloridine and lincomycin are effective antibiotics against an *Actinomyces pyogenes* infection. This might explain why oxytetracycline was not effective in the treatment of this case.

Clinical and gross pathology of the disease are indistinguishable from a *Mycobacterium bovis* infection, but the isolation of a pure culture of *Actinomyces pyogenes* and the negative result obtained with Ziehl Neelsen stain ruled out tuberculosis.

Another disease from which this infection should be differentiated is caseous lymphadenitis that can spread to visceral organs. In this report, however, the superficial or preescapular, precrucial, parotid and submaxillary lymph nodes usually involved in caseous lymphadenitis (2, 8, 9) were not affected.

The source of the infection in this case was not clear but it has been reported that organisms can gain entrance into the tissue from injuries and thus complicate other infections caused by viruses and mycoplasmas (4).

This shows that visceral abscessation in small ruminants can also result from an *Actinomyces pyogenes* infection, hence the need for proper investigation and diagnosis of this infection in these animals.

## Acknowledgments

The authors appreciate the cooperation of the management of Zar-tech (Agric) Ltd. Ibadan for their support and Mrs. Ohore for typing the manuscript.

## REFERENCES

1. ADDO P.A., 1987. Fluorescent antibody technique in the diagnosis of *Corynebacterium pseudotuberculosis*. *Bull. Anim. Health Prod. Afr.*, **26**: 127-131.
2. AMEH J.A., ADEKEYE J.O., 1994. An outbreak of caseous lymphadenitis of goats on an LIBC farm, Dangora, Nigeria. *Niger. J. Anim. Prod.*, **21**: 149-151.
3. ATEF M., SHALABY M.A., ABO'NORAYE M.A., 1986. The influence of sex hormones on the efficacy of some antibiotics during experimental *Corynebacterium pyogenes* infection in mice. *Bull. Anim. Health Prod. Afr.*, **34**: 81-85.
4. CARTER G.R., CHENGAPPA M.M., ROBERTS A.W., 1995. Essentials of veterinary microbiology, 5th Ed. Baltimore, MD, USA, William and Wilkins, p. 214-216.
5. COWAN S.F., STEEL K.J., 1974. Manual for identification of medical bacteria, 1st Ed. Cambridge, UK, Cambridge University Press.
6. COYLE M.B., LIPSKY B.A., 1990. *Coryneform bacteria* in infectious diseases: Clinical and laboratory aspects. *Clin. Microbiol. Rev.*, **3**: 223-246.
7. FRAZER C.M., BERGERON J.A., MAYS A., AEILLO S.E., 1991. The Merck veterinary manual. Rahway, NJ, USA, Merck and Co.
8. KURIA J.K.N., NGATIA T.A., 1990. Caseous lymphadenitis of sheep and goats in Kenya. *Bull. Anim. Health Prod. Afr.*, **38**: 15-18.
9. NFI A.N., NDI C.N., 1994. Caseous lymphadenitis in sheep and goats in Mankon, Cameroon. *Bull. Anim. Health Prod. Afr.*, **42**: 163-166.
10. WILSON G.S., MILES A., 1975. In: Topley and Wilson Eds, Principles of bacteriology and immunity, 6th Ed., Vol. 1, p. 636.

Reçu le 14.04.2001, accepté le 19.06.2001

## Résumé

**Akpavie S.O., Emikpe B.O.** Résultats d'observation d'une infection à *Actinomyces pyogenes* chez une chèvre

*Actinomyces pyogenes* a été isolé chez une chèvre dont les poumons et le foie présentaient des abcès viscéraux.

**Mots-clés :** Caprin - *Actinomyces pyogenes* - Abcès - Nigeria.

## Resumen

**Akpavie S.O., Emikpe B.O.** Observaciones en una infección por *Actinomyces pyogenes* en una cabra

*Actinomyces pyogenes* fue aislado en un caso de un absceso visceral, involucrando pulmones e hígado en una cabra.

**Palabras clave:** Caprino - *Actinomyces pyogenes* - Absceso - Nigeria.