

# Communication

## Aetiology of an actinomycosis-like abscess in cattle

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EL-SANOUSI ( S.M.), AL-DUGHYEM (A.), RAMADAN (R.O.).  
Étiologie d'un abcès ressemblant à une actinomycose bovine. *Revue Elev. Méd. vét. Pays trop.*, 1991, 44 (2) : 159-160

*Arachnia propionica* a été isolée d'un abcès semblable à celui causé par une actinomycose sur une vache métisse âgée de 4 ans. Ses propriétés sont décrites et comparées à celles d'organismes étroitement associés. *Mots clés* : *Arachnia propionica* - Bovin - Actinomycose - Étiologie - Arabie Saoudite.

### Introduction

Lumpy-jaw (actinomycosis) is a chronic granulomatous disease of cattle characterized by a marked swelling and associated with a suppurating osteitis in the region of the cheek and mandibular region. Lesions develop after a damage of the buccal epithelium and subsequent inoculation of the organism into the site (2). The common manifestation of the disease in cattle is a rarefying osteomyelitis of the bones of the head, particularly the mandible and maxilla. On rare occasions soft tissues are involved, particularly the digestive tract (1). *Arachnia propionica* and asporogenic as well as anaerobic bacteria were reported to be associated with actinomycotic tubers of pigs (4).

### Materials and Methods

#### Case description

A four-year-old crossbred cow had a swelling on the left side of the ventral part of the lower jaw for more than one month. The lesion was mainly located cranial to the mouth commissure. It had a hard base but a soft centre. The skin covering was intact. Though the lesion reached the periosteal covering of the lower jaw, yet extensive bone involvement was not present. Incision of the swelling revealed crumbled, caseated and mineralized sulphur-yellow pus. After curettage, the cavity was cleaned with tincture of iodine. Oxytetracycline was administered for five days.

#### Bacteriology

A small portion of the crumbled pus was stained according to Gram's and Ziehl-Neelsen's methods. Cultures on heart-infusion agar were made and incubated aerobically as well as anaerobically at 37 °C.

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Reçu le 15.10.1990, accepté le 6.11.1990

## Results

Slides stained with Gram's stain showed Gram-positive entangled filaments. The other slide revealed radially arranged club-shaped pear-like acid fast bodies surrounding filaments typical for *actinomyces* spp.

Two types of colonies, *i.e.* smooth and rough, were obtained anaerobically after five days of incubation. No growth was obtained in media incubated aerobically. The smooth colonies were circular convex, 1.5 mm in diameter. The rough colonies were irregular, umbonate with convoluted surface resembling the "molar-tooth" with fading orange-colour. On subsequent subcultures, the colour faded away leaving porcelain-white colonies. According to the biochemical properties the organism was suspected to be *Arachnia propionica* (5). The NCTC of Colindale (England) was consulted. From there, the cultures were transferred to the National Hospital of Nervous Diseases (London). Both types of colonies were identified as rough and smooth colonies of *A. propionica*. The biochemical properties of the isolated strains are presented in table I.

TABLE I Properties of *A. propionica* isolated from a cow compared with *A. bovis* and *A. propionica*.

Characteristics	<i>A. bovis</i>	<i>A. propionica</i> *	<i>A. propionica</i> **
Growth in air	—	—	—
Growth anaerobically	+	+	+
Microaerophilic filaments	D	+	+
Catalase	—	—	—
CO <sub>2</sub> requirements	—	—	—
CO <sub>2</sub> improves growth	+	+	+
Amagdaline	—	o	—
Arabinose	—	—	—
Adonitol	—	d	+
iso Erythritol	d	—	+
Glucose	+	+	+
Galactose	+	d	—
Fructose	+	+	+
Lactose	+	+	w
Mannitol	—	w	+
Raffinose	—	+	+
Ribose	—	d	—
Maltose	+	+	w
Sucrose	+	+	+
Trehalose	—	+	—
Xylose	d	—	—
Starch	—	—	—
VP	—	d	—
Aesculin	o	d	—
Nitrate	+	+	+
Indole	—	—	—
Metronidazole	R	R	R
End products from glucose fermentation			
Acetic acid	+	+	+
Propionic acid	—	+	+
n-Butyric acid	—	—	—

\* After Sneath et al., 1986.

\*\* *A. propionica* isolated from cow suffering from a disease similar to actinomycosis. R : resistant. W : weak. D : different reactions in different taxa. d : 16-84 % strains positive.

o : reaction not known.

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With the exception of erythritol which was weak, with rough colonies, both rough and smooth types of colonies of *A. propionica* gave similar biochemical results.

## Discussion

Actinomycosis in cattle is routinely diagnosed to be caused by *Actinomyces bovis*. However, other organisms may be involved in extensive lesions (1). *Arachnia propionica* apparently does not occur in animals (5) and its presence in veterinary literature is extremely rare. The present case was clinically diagnosed as a typical case of actinomycosis. The isolation of *A. propionica* suggests a possible aetiology for actinomycosis.

The major amino acids in the cell wall of the isolated *A. propionica* were : alanine, glutamic acid, glycine and LL diaminopimelic acid. Such characters which distinguish *A. propionica* from *actinomyces* spp. are unlikely to be looked for or detected in a routine microbiological laboratory ; this is unfortunate as in this case *A. propionica* was isolated from a case clinically typical for actinomycosis (3) ; the present case is a similar one. We wonder how many cases of "lumpy-jaw" in cattle were attributed to *A. bovis*, while the aetiological agent was simply *A. propionica*. On the other hand, *A. propionica* causes lacrimal canaliculitis in man and thus its presence in cattle might equally cause human hazards. The need is urgent for simple tests that can differentiate between *A. bovis* and *A. propionica* and which can be conducted by routine medical laboratories.

## Acknowledgements

We are very grateful to Mrs. A. STANNARD of the National Hospital of Nervous Diseases, London.

EL-SANOUSI (S.M.), AL-DUGHYEM (A.), RAMADAN (R.O.). Aetiology of an actinomycosis-like abscess in cattle. *Revue Elev. Méd. vét. Pays trop.*, 1991, 44 (2) : 159-160

*Arachnia propionica* was isolated from an abscess resembling actinomycosis in a four-year-old crossbred cow. The properties of the organism were described in comparison with closely related organisms. *Key words* : *Arachnia propionica* - Cattle - Actinomycosis - Aetiology - Saudi Arabia.

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Isolation of *Corynebacterium renale* from slaughtered cattle at the Zaria abattoir in Nigeria

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FATIHU (M.Y.), ADDO (P.B.). Isolement de *Corynebacterium renale* sur des bovins provenant de l'abattoir de Zaria au Nigeria. *Revue Elev. Méd. vét. Pays trop.*, 1991, 44 (2) : 160-161

Quarante vessies ont été collectées à l'abattoir de Zaria sur des bovins apparemment en bonne santé : 24, soit 60 p. 100, provenaient de mâles et 16, soit 40 p. 100, de femelles. Des échantillons d'urine ont été prélevés et mis en culture pour la recherche de *Corynebacterium renale*. Quatre échantillons chez les mâles et un chez les femelles ont été trouvés positifs. La différence entre les sexes était statistiquement significative pour  $P < 0,001$ . *Mots clés* : Bovin abattu - Prélèvement - Urine - Vessie - *Corynebacterium renale* - Nigeria.

## Introduction

*Corynebacterium renale* is the aetiological agent of contagious bovine pyelonephritis which primarily occurs in cattle (2). The organism has also been isolated from animals like horses (3), sheep (6) and dogs (9). Laboratory animals such as rabbits and mice have been infected experimentally by the organism (7, 8). There are few reports on *C. renale* in Nigeria (1). The present study was conducted to determine the prevalence of *C. renale* in apparently healthy slaughtered cattle.

## Materials and Methods

A total of 40 urinary bladder samples were obtained from cattle slaughtered at the Zaria abattoir. Out of these, 24 were from males and 16 from females. The urinary bladders were tied to retain the urine and each was wrapped in a polyethylene bag and carried to the laboratory in a cold recipient.

In the laboratory, urine was aspirated from the urinary bladders using sterile syringes and needles, after disinfection of the sites of puncture. The urine samples obtained was poured into sterile-capped centrifugation tubes and centrifuged at 2.000 rpm for 10 min. The urinary sediments obtained after discarding the supernatant solution was inoculated on blood agar (BA) and phenyl-ethyl-alcohol agar (PEA). The plates were incubated at 37 °C for 24-48 h.

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Reçu le 23.11.1990, accepté le 23.1.1991.