



Prevalence of tuberculosis-like lesions in goats slaughtered at Bauchi central abattoir, Bauchi State

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Abstract

Slaughter houses provide excellent avenues for detecting diseases of both economic and public health importance in livestock. A study of 12,429 slaughtered goats at the Bauchi central abattoir was carried out (from February to May, 2015) in order to determine the prevalence of tuberculosis-like lesions in slaughtered goats. The lesions were counted, visually examined and palpated during post mortem meat inspection. Of the 12,429 goats slaughtered and examined, tuberculosis-like lesions were observed in four (4) slaughtered goats with a prevalence of 0.03%. It was concluded that although the prevalence was relatively low, the financial losses and public health implications of the finding should not be over looked.

Keywords: Abattoir, Bauchi State, Goat, Prevalence, Slaughtered Goats, Tuberculosis

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Introduction

Goat (*Capra hircus*) as known in different parts of the world is one of the smallest domesticated ruminant which have been with mankind for many generations. The important role of goats in production of milk, wool and manure is well documented (Devendra, 1999). Goats are prolific and require low input for moderate level of production. They reach maturity at early age and are nutritionally and financially profitable to keep for production (Devendra & Burns, 1970). Tuberculosis (TB) in goats has not been extensively investigated in comparison with cattle in Nigeria. Tuberculosis in goat and sheep is caused by members of *Mycobacterium tuberculosis* complex predominantly *Mycobacterium bovis* and *Mycobacterium caprae* (Crawshaw *et al.*, 2008) and in some cases by *Mycobacterium tuberculosis* (Cadmus *et al.*, 2009). In goats, the disease normally spread through head to head contact, which will include sharing of contaminated haystacks and water bowls as well as infected aerosols spread from breath. Tuberculosis can affect the udder in which case the milk is infective until or unless is pasteurized. Infected sputum coughed up can be swallowed and thus infect the gastrointestinal tract. Most commonly in goats, the cough is usually seen as a chronic cough which is unresponsive to treatment and may be

accompanied by gradual loss of weight and sometimes diarrhoea (Aranaz *et al.*, 2003). The Predilection site for tuberculosis in goats is the lower respiratory tract and the associated lymph nodes (Daniel *et al.*, 2009).

Epidemiological studies have indicated that tuberculosis in goat and sheep has a wide global distribution, being reported in several countries of the world including New Zealand, Sudan, Spain, Nigeria, the United Kingdom, Italy, Algeria and Ethiopia (Aranaz *et al.*, 1999).

Caprine tuberculosis poses a risk to goat health and production in developing world (Cadmus *et al.*, 2009). There has been recent increase in caprine tuberculosis in several countries; even in those practicing a long standing test and slaughter policy (Cadmus *et al.*, 2009). It is reported that the infection is widespread in Africa where goats co-graze with cattle that were not subjected to tuberculosis testing and slaughter protocols (Aranaz *et al.*, 2003). Goats may also become infected with *Mycobacterium bovis* when sharing pastures with infected cattle, at watering points, market places and shared night shelters (Naima *et al.*, 2011).

Report on possible tuberculosis in goats in Nigeria was made by Ojo (1994) on the basis of gross lesions without culture confirmation. Livestock

owners in Nigeria normally graze cattle and goats together, and this practice poses a high risk for transmission of bovine TB among these animals (Ojo, 1994). This practice is especially a threat to goats in Nigeria because of several reports on bovine TB in cattle in Nigeria (Alhaji, 1976; Cadmus *et al.*, 2006; Abubakar, 2007; Danbirni *et al.*, 2010). However, reports on diagnosis of TB in goats in Nigeria are scanty (Cadmus *et al.*, 2009). There is need for awareness on the extent to which the public is exposed to certain zoonotic diseases detected in abattoirs and the financial losses through condemnation of affected organs and carcass especially due to tuberculosis in goats (Nfi & Alonge, 1987). The aim of this study therefore was to determine the prevalence of tuberculosis-like lesions in goats slaughtered at Bauchi central abattoir of Bauchi State, Nigeria.

Materials and Methods

Study site and animals

The study was carried out in Bauchi central abattoir located along Gombe road in Bauchi State. Bauchi town is located between 9° 3' and 12° 3' N and 8° 50' E of the Sudan Savannah of Northern Nigeria. The abattoir is owned by the state Government and various species of domestic animals such as goats, sheep, cattle and camel are slaughtered daily. Most of the goats slaughtered are of indigenous Nigerian breeds (Sokoto Red, Kano Brown and West African Dwarf) with Sokoto Red and Kano Brown being in majority. The goats for slaughter are being purchased at different nearby local markets and transported to the abattoir. According to the abattoir records of 2015, an average of 300 goats of varying ages and breeds were slaughtered daily in Bauchi central abattoir.

Study design and sampling

The study was conducted over four (4) months period (February to May, 2015). Visits were made to the abattoir during weekends at 6:00am before ante mortem examination and slaughter. The number of goats brought to the abattoir was

recorded and a total of 12,429 slaughtered goats were examined during the period of the study. Examination of lesions similar with tuberculosis in the slaughtered goats was conducted.

Post mortem examination

Postmortem inspection was performed based on the principle of meat inspection – Visualization, Palpation and Incision (Umoh *et al.*, 2005) in order to observe for the presence of granulomatous lesions that were descriptive of tuberculosis. The seven lobes of the two lungs of the goat, (left apical, left cardiac, left diaphragmatic, right apical, right cardiac, right diaphragmatic and right accessory lobes) were inspected, palpated and incised. The carcass including internal organs such as liver, kidneys, mammary gland, intestines and lymph nodes were inspected and palpated. Lymph nodes were not incised for fear of contaminating the carcasses and the environment.

The cut surfaces of the organs were thoroughly examined for the presence of abscesses, cheesy masses and tubercles as described by Corner (1994). Where gross lesions suggestive of tuberculosis were found in any of the tissues, the animal was classified as having tuberculosis-like lesions. The prevalence of tuberculosis-like lesions in the goats slaughtered at the abattoir was expressed as percentage i.e prevalence equals the total number of goats with tuberculosis-like lesions divided by the total number of goats slaughtered multiplied by 100 (Danbirni *et al.*, 2013).

Results and Discussion

The result of this study showed that a total of 12,429 goats were slaughtered out of which 4 (0.03%) were observed to have TB lesions. This means 4 per 10,000 slaughtered goats were positive. The highest number of goats slaughtered was in the month of May with a prevalence of 0.05 % while February had the lowest number of slaughtered goats with a prevalence of 0.05% (Table 1).

Table 1: Prevalence study of tuberculosis-like lesions in slaughtered goats in Bauchi Central abattoir of Bauchi State

Months	Total no. of slaughtered goats	No. of slaughtered goats with TB-like lesions	Prevalence of TB-like lesions per 10,000 slaughtered goats
February	2,016	1	5
March	3,512	0	0
April	3,143	1	3
May	3,758	2	5
Total	12,429	4	3

A prevalence of 4 positive cases per 10,000 (0.03 %) slaughtered goats was obtained during the study period. The prevalence in this study is lower compared to the work of Cadmus *et al.* (2008) who reported a prevalence of 0.3% in Bodija Municipal abattoir, Ibadan. The difference in the prevalence could be attributed to the short period of the present study (i.e. 32 days) thereby possibly limiting the amount of data to be obtained in determining the true prevalence of the disease.

Furthermore, the high prevalence reported in Ibadan could be attributed to the longer duration of the study and the use of more sensitive diagnostic technique (deletion typing). More so, the prevalence of 0.03% observed in this study was relatively low compared to the work of Hiko & Agga, (2011) who reported a prevalence of 4.2% in goats slaughtered at Mdjo abattoir in Ethiopia and also that of Tafesse *et al.* (2011) who reported a

prevalence of 3.1% in goat using single intradermal tuberculin skin test in the same abattoir. Silvano *et al.* (2011) reported a prevalence rate of 1.46% in 822 goats screened for TB. This could be attributed to the difference in exposure to TB-infected animals, the occurrence of animal TB in the geographical locations, techniques employed and duration of the studies.

In conclusion, the overall prevalence of tuberculosis-like lesions in slaughtered goats in this study was 0.03%, revealing a relatively low prevalence of potential TB in goats slaughtered at Bauchi central abattoir. Although the rate of identification is moderately low, the risk and public health importance of potential TB in goats should not be overlooked. Further studies needs to be carried out in other abattoirs within Bauchi State in order to established the prevalence of caprine tuberculosis in the State.

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