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Drugs of choice for the treatment of bacterial pneumonia in goats

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Abstract

A total of 41 pneumonic or coughing goats of different sexes and ages of about 8-18 kg body weight purchased from Pallisa, Soroti and Mbale districts were kept indoors at the Livestock Health Research Institute, Tororo (LIRI). On arrival goats were eartagged and blood smears and nasal swabs collected. 33 surviving goats were divided into four treatment groups. One group had 10 goats, two groups had 9 goats each and the fourth group had 5 goatsAll goats in groups I to III treated with Oxytetracycline 10%, Trimethosulf and Pen/streptomycin respectively recovered. Meanwhile all 5 goats in the control group died. From the cultures of lung specimens, it is concluded that the bacterial organisms causing caprine pneumonia are *Pasteurella multocida, streptococcus haemolytica, Corynebacterium* and *Klebsiella pneumoniae.*

Introduction

In Uganda, goats which number 5.4 million are reared on traditional systems including open rangelands. Goats are kept countrywide and provide protein to the population. They are usually housed out doors in makeshift shelters and so are prone to poor health because of exposure to disease vectors and infectious agents. Diseases of goats are some of the most important constraint to productivity. Front ranking health problem of goats throughout Uganda is considered to be pneumonia either alone or complicated with other pathological manifestations. A survey conducted by Twinamasiko *et al.*, (1996) revealed the following conditions in order of importance: pneumonia, helminthosis, abortions, heart-water, trypanosomosis, abscesses, footrot, lameness, orf and mange etc as major diseases affecting goats in Uganda. The survey was carried out in 8 district of Uganda (Kamuli, Masaka, Soroti, Tororo, Moroto, Kotido, Lira and Kasese) representing high goat population and different agro-ecological zones and small ruminant systems. Pneumonia is one of the limiting factors in the improvement of goats industry and is the cause of great economic loss because many goats are affected. Inspite of the low mortality rate, the condition is responsible for poor growth, reduced productivity, debility, and lowered resistance of kids to other diseases and sometimes death.

Although caprine pneumonia is a relatively common condition affecting goats, little research has been conducted to indicate the range and frequency of pathogenic organisms involved. A number of pathogenic bacteria like *Staphylococcus, Pasteurella, Streptococcus, Klebsiella* and others have been associated with caprine pneumonia in Nigeria and Sudan (Ugochukwu, 1984; Abu Bakr *et al.*, 1980). Because of the paucity of literature in bacterial pneumonia of goats in Uganda, this study was undertaken to identify bacterial organisms, which cause pneumonia and effective drugs for treatment.

Material and Methods

A total of 41 pneumonic or coughing goats of different sexes and ages of about 8-18 kg live body weight were purchased from Pallisa, Soroti and Mbale districts. They were transported by road to Livestock Health Research Institute, Tororo. These goats were confined into two rooms in two animal houses. They were watered and fed indoors. On arrival, goats were eartagged and blood smears and nasal swabs collected. Blood smears were

stained with Giemsa and examined under a compound microscope for haemoparasites. Nasal swabs were cultured directly on to the blood and MaConkey agar. They were incubated for 24 hours at 37°C aerobically and examined for typical colonies based on cultural morphology. Sensitivity tests was conducted on blood agar plates. At the same time, all goats were treated against helminthosis using albendazole (vermitan 10%) 0.5ml/kg body-weight and this was repeated every three weeks and their beddings changed at the sametime. Eight goats died within three weeks of arrival but before treatment with antibiotics. Postmortem was carried out on dead goats and lungs aseptically collected and stored at –20°C until required. The remaining animals were divided into four treatment groups. Group I had 10 goats, group II and III 9 goats each and group IV had only 5 goats. Group I was treated with Oxytetracycline 10% at 1ml/25kg body weight, group II with Trimethosulf at 2ml/25kg body weight, group III with Pen/streptomycin at1ml/25kg body weight while group IV was not treated and so acted as untreated control. Drugs were administered intramuscularly.

After treatment, goats were examined clinically for two weeks and nasal swabs collected. Post mortem examination was performed on control goats that died. Culture and sensitivity was carried out on lungs as previously described for nasal swabs.

Results

Staphylococcus aureus and *S. albus* were isolated from nasal swabs of 9 (25%) and 5 (12.2%)goats respectively on arrival to the Institute. These bacteria were sensitive to Co-trimoxazole, Ciprofloxacin, Ampicilin and Gentamycin but resistant to Tetracycline, Roxythromycin and Cefoxalocin.

Culture of lungs from all goats that died revealed *Pasteurella multocida, Strephtococcus haemolytica, Corynebacterium,* and *Klebsiella pneumoniae* while *Mycobacterium tuberculosis* was detected in only one lung of a goat from Pallisa. These bacteria were sensitive to Tetracycline, Co-trimoxazole, Ampicillin, Ciprofloxacin and Gentamycin.

Following various treatments, all goats in groups I, II, and III recovered clinically. These goats had good appetite, had no nasal discharge and looked healthy with good shinny coats. They had stopped coughing. However,all 5 goats belonging to the control group died. The three drugs used were all effective in the treatment of pneumonia in goats. However, *S. aureus* and *S. albus* were again isolated one week after treatment.

Discussion and conclusion

Isolation of *S. aureus* aand *S. albus* from nasal swab weeks before, during and after treatment would indicate that these bacteria were not the cause of pneumonia. However,the same organisms were incriminated from caprine pneumonic lungs (Ugochukwu 1984 and Abubakr 1980) Nevertheless nasal swabs seem not to be the right sample for the identification of bacteria causing pneumonia. Our observations that *Pasteurella multocida, streptococcus haemolytica, Corynebacterium* and *Klebsiella pneumoniae* are the cause of bacterial caprine pneumonia support findings reported by Ojo (1976). These bacteria were most sensitive to Oxytetracycline 10% injection and these were in addition sensitive to Gentamycin, Ampicillin, Ciprofloxacin and Co-trimoxazole.

Oxytetracycline, Pen-Strep and Trimethosulf were all found to be effective in the treatment of goat pneumonia because all the treated goats recovered while all the untreated control goats died. These drugs are available and therefore accessible in most parts of Uganda.

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