MERIT RESEARCH JOURNALS
www.meritresearchjournals.org

Merit Research Journal of Agricultural Science and Soil Sciences (ISSN: 2350-2274) Vol. 5(8) pp. 370-374, July, 2017
Available online http://meritresearchjournals.org/asss/index.htm

Case Report

Successful clinical management of confirmed cases of infectious Kerato-conjuctivitis caused by *Moraxella* specie in a herd of five West African Dwarf goats at the University of Nigeria, Nsukka

Uchendu G. C. O[1*], Anya K. O.[2], Ugokwe N. I.[1] and Ugwu K. O.[1]

[1]Veterinary Teaching Hospital, University of Nigeria Nsukka Enugu State Nigeria

[2]Department of Veterinary Obstetrics and Gynaecology, University of Nigeria, Nsukka

***Corresponding Author's E-mail: goodheadisgood@yahoo.com**

Abstract

Five West African Dwarf goats showing primary complaints and symptoms consistent for Kerato-conjunctivitis were presented to the Veterinary Teaching Hospital University of Nigeria, Nsukka. History and laboratory investigation confirmed condition caused by *Moraxella* organism. Total recovery of the entire herd occurred 5th day following treatment using Oxytetracycline (5%) at 6mg/kg and Gentamycin eye drop.

Keywords: WAD Goats, *Moraxella* infection, Oxytetracycline, Gentamicin Catalase test, Oxidase test

INTRODUCTION

Infectious kerato-conjunctivitis (IKC) also known as pink eye disease is a term used to describe the combined inflammation of the cornea and the conjunctiva. Its synonyms include infectious ophthalmia, infectious keratitis, keratitis solaris (Hughes *et al.,* 1965 in Hughes, 1981)Pink eye is a worldwide, highly contagious disease of considerable economic importance; caused by a wide range of infectious bacteria or merely Giacometti *et al.,* 2002). The etiologic agents include *Mycoplasma spp.* (esp. *Mycoplasma conjunctivae*), *Moraxella bovis*, *Moraxella (Branhamella* or *Neisseria) ovis*, *Colesiota (Rickettsia) conjunctivae*, *Chlamydophilapecorum*, *Coxiellaburnetii* (Khan, 2005), *Listeria monocytogenes* and *Acholeplasmaoculli* and *Staphylococcus aureus* (Faez *et al.,* 2015). *Mycoplasmaconjunctivae*in the Netherlands have been associated as primary etiologic agent for the occurrence of infectious Kerato-conjuctivitis in sheep and goats. Equally isolated from the sheep and goat samples were *Moraxella ovis* and *Mycoplasma arginine* (TerLaak *et. al.,* 1988).

The farm animals are the reservoir for the bacteria, *M. bovis*. This organism can equally be transmitted by animal handlers or direct contact with eye and nose discharg es of infected animals, contact with fomites (equipment or hands that can carry the disease), and most commonly by mechanical vectors (Kasimanickam and Parish; 2011). The face fly (*Musca autumnalis*), the house fly (*Musca do mestica*), and the stable fly (*Stomoxys calcitrans*) are inst rumental in spreading the disease. The same strain can remain on the farm in carrier animals from year to year (Ter Laak *et al.,* 1988). Dry dusty environmental conditions; shipping stress; bright sunlight and irritants such as pollens, grasses and flies tend to predispose to or exacerbate the disease. Flies also serve as vectors. IKC is usually characterized by cloudiness and redness of the cornea and the conjunctiva; hence, the name pink eye disease (Madubuike *et. al.,* 2013). The disease is usually acute and tends to spread rapidly; affecting one or both eyes (Faez *et al, 2015)*. In all species, young animals are affected most frequently but animals of any age can be affected (Khan, 2005). In goats, concurrent polyarthritis, mammary gland and uterine infection may be present (Faez *et al*., 2015; Khan, 2005).

Equally observed is lacrimation, varying degrees of corneal opacity and ulceration-to-perforation of cornea (Giacomett *et Al.,* 2002; Khan, 2005). Further associated clinical signs include blepharospasm, epiphora, corneal opacity and ulceration, and conjunctivitis in goats with or without varying degrees of keratitis (Khan, 2005). The eye discharges are usually serosanguinous at first, but turns mucopurulent; and, in severe cases may culminate in temporary or permanent blindness (Angelos, 2015) The painful eyes, coupled with bilateral opacity and ulceration of the eye will lead to ocular discomfort or visual disturbance.

Lesions vary in severity; though may regress in early stage or continue to progress. The entire cornea may be opaque, causing blindness in affected eye; blood vessels may invade the cornea from limbus toward the ulcer (Angelos, 2015). Continued active ulceration may cause corneal rupture. In cases of relapse, later lesions are not as severe as initial lesions (Khan, 2005).

The disease is of considerable economic importance. Losses occur through direct and indirect causes. Indirect causes are attributed to discomfort during the acute stage because animal with severely diseased eyes tend to protect the affected eye(s) from contact with other animals and objects in the environment. The resulting inactivity tends to reduce feeding time and causes decreased meat and milk production and loss of general body condition. Another indirect causes/effect include; weight loss, heat (*estrus*) procrastination, injury. Direct causes of loss arise from cost of drugs, facilities, salaries and other cost incurred in treatment and management of the disease (Hughes *et al.* (1965) in Hughes, 1981). The disease can spread across a herd thereby increasing the magnitude of the loss.

In addition to been economically important, IKC has shown high public health importance in that it is considered highly contagious and spreads fast among goats within a herd and can also spread to the animal attendants (Jin *et Al.,* 2014).

CASE REPORT

On the 10th of February 2016, a farmer presented a four-year old black female West African Dwarf Goat to the Veterinary Teaching Hospital of the University of Nigeria, Nsukka with a primary complaint of reddening of the eye and partial blindness. History of the case revealed that within a period of 12 days the reddening of eyes was first noticed in a 4 weeks old kid before spreading to the other 4 goats in the same herd of five goats. Prior to clinical presentation, the farmer had self-managed the condition using Chloramphenicol eye drop over a period of 7 days. Severity of symptoms progressed adversely leading to watery then mucopurulent discharge from the reddened, swollen eye and cloudiness in the white part of the eye (APPENDICS 1 and\\\]\ 2). These symptoms were most severe in the 4-year old WAD than the other 4 younger goats. The goats are fed with Bambara nut chaff, lush grass, regular kitchen waste, left over household food and rarely on industrial livestock feed.

Physiologic parameters collected from the 4-year old goat showed that the animal was apparently healthy; with body weight of 21kg; temperature of 39.6^0 C; heart rate of 104 beats per minutes (bpm) and respiratory rate of 23 cycles per minutes (cpm). Differential diagnosis included; Non-infectious pink eye, Trypanosomosis and Vitamin A deficiency and a tentative diagnosis of infectious Kerato-conjuctivitis.

Samples collected and laboratory examinations that were carried out included; blood for blood parasite examination using direct wet mount; eye swab of the muco-purulent material from affected eye was collected for culture and sensitivity test for choice of anti-biotic therapy and Gram staining, Catalase and Oxidase test for organism identification.

RESULTS AND DISCUSSIONS

Laboratory Examinations

Direct wet mount was negative for Trypanosome *spp*. Twenty-four (24) hours after culture on nutrient agar, the growth observed were some large, flat, white, dry colonies with serrated boarders and dot at the center. Following a 24 hours culture on nutrient agar some large, flat, white growth, showing dry colonies with serrated boarders and dot at the center was observed. After gram staining, the organism seen under the microscope appeared as Gram–ve short rods (diplococci). Organism showed no growth on Mac-Conkey. A Gram–ve multidisc was used in sensitivity test and the organism is: highly sensitive to Pefloxacin, Gentamycin and Clarithromycin (+++); moderately sensitive to Ceftriaxone, Ofloxacin, Augumentin, and Chloramphenicol (++); and less sensitive to Nitrofurantoin, Cetriaxone and Ampicillin (+). Oxidase and Catalase test were conducted using 3% Hydrogen peroxide and N, N-tetramethyl-p-phenylenediamine respectively. The organism was found to be oxidase and catalase positive. These results confirm *Moraxella spp*. Consequent on this result Infectious Kerato-conjuctivitis was definitely diagnosed.

Treatments

A stat dose injection of Diamenazeneaceturate was administered at the dose of 7mg/kg, which was repeated after 14 days. Oxytetracycline at the concentration of 5% at 6mg/kg was administered intra-muscularly for 5 days alongside Gentamycin eye drop given every 12 hourly for 5 days. Adequate care, warmth, lush grass and plenty of clean water was fed to the five goats. Total recovery was

recorded by the fifth day of treatment and as at time of this report; 105 days after the treatment all the goats are in good health condition without report of repeat or relapse of the infection in the herd.

Discussions

A 4-year-old goat presented to the clinic showed obvious clinical signs of infectious Kerato-conjuctivitis; insert abbreviation thus, leading to investigation of the entire herd being that IKC is known to spread across affected herd (TerLaak *et al.,* 1988). As at time of first presentation the infection had spread across the entire herd of five goats. Tentative diagnosis of this condition in the clinic was based on the presenting clinical signs, which were consistent for IKC. These signs included pink eye, corneal opacity, areas of ulceration, serous to muco-purulent ocular discharges. Differentials like Trypanosomsis, which is equally known to cause corneal opacity was ruled out by carrying of direct wet mount which showed absence of motile extracellular parasites. Isolation and identification of the etiologic agent from the eyes of affected animal served for definitive diagnosis of the etiologic agent. Tests of culture and sensitivity was done in order to determine the incriminating organism causing this infection and also to determine the best antimicrobial agent that will best treat the condition. Biochemical tests of Catalase test and Oxidase test were done to confirm the organism causing this condition. Moraxella specie was incriminated to be the cause of the condition because of the colonial morphology observed on nutrient agar, the gram staining characteristics, its inability for it to grow on Mac-Conkey agar and this was confirmed by its positive reaction to Oxidase and Catalase reagents.

Also, because the condition started with a kid in same pen before spreading to the goat presented to the clinic, non-infectious pink eye due to irritants was ruled out since the latter does not spread in a herd.

Empirical treatment using Diamenazeneaceturate which is a trypanocide and chloramphenicol (antibiotic) eye drop was given on the first day of presentation before laboratory diagnosis was done because trypanosomosis was suspected on presentation because of the eye lesion. Definitive treatment was administered after microbial culture and sensitivity was carried out; viz:Oxytetracycline which is a polycyclic broad spectrum antibiotics active against Gram positive, Gram negative bacteria, spirochaetes, rickettsia, mycoplasma and some protozoan organisms was given because of its broad-spectrum activity and availability (TerLaak *et. al.*, 1988; Aliu, 2007; Aliu *et al.,* 2007).

Gentamycin is an aminoglycoside bacteriocidal antibiotics active against Gram negative anaerobes. It was used as an eye drop because the incriminating organism is Gram negative and sensitive to the drug as shown by sensitivity test. After completion of the treatment, the colour and functioning of the eyes of the animals were fully restored. Furthermore, there was quick response to treatment without administration of Vitamin A.

CONCLUSIONS

In Nigeria cases of non-obvious/non-reportable diseases in the WAD are usually not reported to Clinic for thorough investigation and diagnosis because of poor culture of hospitalization, ignorance, in addition to farmers considering the diagnostic and treatment processes as un-economical vis-à-vis the economic value of the WAD. Thus, many infectious diseases of high economic and public health importance remain un-noticed and un-researched. This investigation and the diagnostic process reported here were sponsored by the researchers because the farmer claimed financial incapacitation.

RECOMMENDATION

The authors therefore recommend for routine thorough investigation and confirmatory diagnosis to be carried out on farm animals even in seemingly non-economical process as this may uncover and avert an impending epidemic. Furthermore, this treatment regimen is recommended for management of confirmed cases of Kerato-conjuctivitis due to Moraxella organism in WAD being that it has proven economical and simple and effective.

REFERENCES

Aiello E. Susan *et. al*., (1999), in the Merck's Veterinary Manual. Merck and Co., Inc. Whitehouse Station, N.J., USA. Eight Edition Pages 1774-1775.

Aliu YO (2007). Veterinary Pharmacology (Part VI,) Fluid therapy and Diuretic Agents. Pages 49-52 and 245-247

Aliu Y O, *et. al*., (2007) Nigerian Veterinary Formulary. Handbook of Essential Veterinary Drugs, Biologics and Pesticide Chemicals.(1st Ed.)A publication of the Veterinary Council of Nigeria. Pages 16, 29, 32, 91

Aliu YO (2007). Veterinary Pharmacology, Chapter 30, Page 379-382. (First Edition)

Angelos JA (2015). Merck Veterinary Manual. Merck Sharp &Dohme Corp., a subsidiary of Merck & Co., Inc., Kenilworth, N.J., U.S.A. Available Online at http://www.merckvetmanual.com/mvm/eye_and_ear/infectious_keratoconjunctivitis/overview_of_infectious_keratoconjunctivitis.html. Retrieved on September 28, 2016.

Faez F, . *et al.* (Provide names of other authors) (2015). Prevalence of Moraxella ovisInfection in Goats under the Ladang Angkat Programme, Universiti Putra Malaysia: A Cross-Sectional Study.IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS) PP 99-102.

Giacometti M, Janovsky M, Belloy L, Frey J (2002). Infectious Keratoconjuctivitis of ibex, chamois and other Caprinae. Institute of Animal Pathology, University of Berne, Länggasstrasse 122, CH-3012 Berne, Switzerland.Revue Scientifique et Technique (International Office of Epizootics)[2002, 21(2):335-345]

Hughes et. al., 1965 in Hughes, E. David (1981). Infectious Keratoconjuctivitis: disease of Cattle in the Tropics; Economic and Zoonotic Relevance. Part II. Pp. 237-245 (1981).DOI 10.1007/978-94-015-0805-1_19. Springer International Publishing AG.

Jin C, Yanning Y, Xiaodong T, Wanju Y, Ruoxi W, Xaunxiao J, Yuan Y, Yiqiao X (2014). Prevalence of Infectious Keratitis in Central China. Available Online at https://www.ncbi.ncm.nih.gov/pmc/articles.PMC3976152/#!po=78.5714

Kahn MC, Anderson DP, Leo BJ, Quesenberry KE, Radostitis OM, Reeves PT, Wolf AM (2005). The Merck Veterinary manual (9th Ed.) Merck & Co., Inc. Whitehouse Station, N. J., U.S.A. Pages 412-413,

Kasimanicckam R, Parish S (2011). Infectious Keratoconjuctivitis: ag animal health spotlight; Veterinary Medicine Extension, Washington State University. Available Online at…

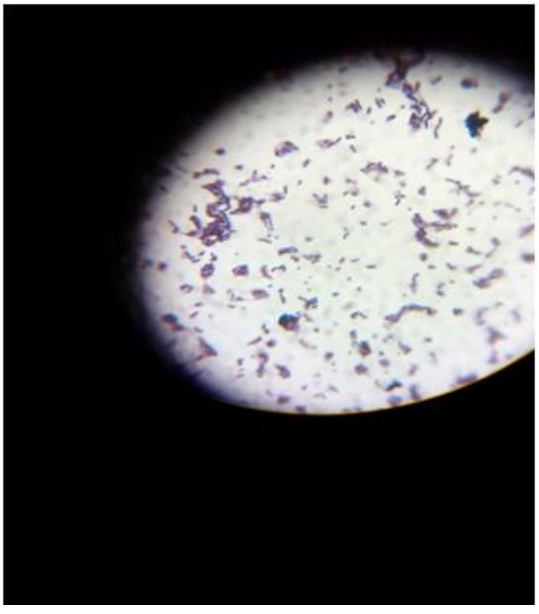
Madubuike AO, Onoja RI, Anyogu DC, Agina O (2013). Unusual extraocular manifestations in moraxellosis of a West African Dwarf goat: a case report. Article in Comparative Clinical Pathology, https://www.researchgate.net/publication/263338175

TerLaak EA, Schrender BEC, Smith-buys CMC (1988). The occurrence of Mycoplasma conjunctivae in the Netherlands and its association with IKC in the sheep and goats.Available Online in 2011 at http://dx.doi.org/10:1080/01652176.1988.

APPENDIX

Appendix 1. Showing head of wad goat showing pink eye lesions on one eye and patches of muco-purulent discharges on face of animal

Appendix 2. Showing head of wad goat showing bilateral pink eye lesions and patches of muco-purulent discharges 5 days after progressing to both eyes of animal



Appendix 3. Showing gram -ve short rods (di[lococco) in a microscope view

Appendix 4. Showing a gram -ve multidisc was used in sensitivity test