IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)
e-ISSN: 2319-2380, p-ISSN: 2319-2372. Volume 10, Issue 8 Ver. III (August 2017), PP 41-43
www.iosrjournals.org

Streptothricosis (Dermatophilosis) infection in cattle

*Adedeji O. A, Adene I.C
College of Agricultural Sciences Joseph Ayo Babalola University Ikeji-Arakeji, Osun State, NIGERIA
Corresponding Author: Adedeji O. A

***Abstract**: Clinical manifestation of Streptothricosis (Dermatophylosis) outbreak in cattle at Joseph Ayo Babalola University Livestock farm was monitored and treated in ten adult cattle –two males (white Fulani) and eight females (seven white Fulani and one Ndama breeds) meant for teaching and research. The response of the affected animals to treatment was positive, though with carrier status resulting in reoccurrence in the following raining season. The Ndama and Muturu breeds and the hybrid of the Ndama and White Fulani showed resistance to the infection. The resistant result of the hybrid in this experience can be utilized in breeding selection especially in these breeds.*

***Keywords**: Breeds, Cattle, Dermatophylosis, Season, Treatment.*

Date of Submission: 22-04-2017 Date of acceptance: 05-09-2017

I. Introduction

Dermatophilosis is a contagious disease of the epidermis (skin) caused by a Gram positive bacteria called *Dermatophilus congolensis*. It is also called cutaneous streptothricosis, Lumpy wool, and Strawberry footrot disease (Karen 2013) depending on its host. Among domestic animals, cattle, sheep, goats, and horses are affected most frequently, and pigs, dogs, and cats rarely. Bovine streptothricosis is associated with the tick species *Amblyomma variegatum*. It is an acute or chronic, local or progressive, and sometimes fatal, exudative dermatitis. It is characterized by a serious exudate which dries to mat the hair into paintbrush-like tufts, or to form crusts and thick scabs. It is widespread in tropical areas of vector distribution, where its appearance is mainly seasonal, occurring more during the rainy season.

It is commonly called cutaneous streptothricosis in cattle, goats, and horses; in sheep, it is termed lumpy wool when the wooled areas of the body are affected. Infection in camel herds has been related to drought and poverty. Recent isolates from chelonids (Masters *et al* 1995 and James *et al* 2004) may represent a new species of *Dermatophilus*. It is also a common disease in farmed crocodiles (*D crocodyli nov*). The few human cases reported usually have been associated with handling diseased animals. (Karen 2013).

Factors such as prolonged wetting by rain, high humidity, high temperature, and various ectoparasites that reduce or permeate the natural barriers of the integument influence the development, prevalence, seasonal incidence and transmission of dermatophilosis. Ticks and biting flies such as tsetse fly and lice are major predisposing factors in cattle and sheep, respectively.

The organism can exist in a quiescent form within the epidermis until infection is exacerbated by climatic conditions (Brian and Larry 2013). Epidemics usually occur during the rainy season (Meseret and Sefinew 2011). Moisture facilitates release of zoospores from preexisting lesions and their subsequent penetration of the epidermis and establishment of new foci of infection. High humidity also contributes indirectly to the spread of lesions by allowing increases in the number of biting insects, particularly flies and ticks that act as mechanical vectors. Shearing, dipping, or introducing an infected animal into a herd or flock can spread infection.

Case History:

In the year 2011, ten adult cattle -two males (White Fulani) and eight females (seven Fulani and one Ndama breeds) were purchased from Igbeti cattle market, a town in the Northern part of Oyo state and later five Muturu breeds in Abeokuta Ogun state Nigeria, for Teaching and breeding purpose in Joseph Ayo Babalola University (JABU) Ikeji-Arakeji, Teaching and Research farm. They were quarantined dewormed and given a five day course of antibiotic and vitamin treatment.

About two months later, they were infested with ticks and tsetse fly, and gradually scab starts to develop in the neck and shoulder region which rapidly spread to the hindquarter in between the thighs and mortality ensued. The Ndama breed though infested with ticks, she and her calf and the Muturu breeds were not infected with Dematophilosis and did not develop any scab, they survived the outbreak.

Clinical Signs:

Several raised spots were seen initially around the shoulder and the neck, and at the inner thigh (perinea) region (Figure1), which gradually began to peel off leaving an ulcerated wound especially at the thigh area. This created inconveniences for the animals as flies continue to peck at the site, they lost their appetite and began to walk and graze with difficulty, which eventually led to death.

Figure1: Showing one of the affected Fulani Breed.

Figure2: Showing the affected hindquarter.

Figure3: Showing the affected shoulder

Post mortem Examination:

The carcass appeared emaciated, rough skin with scab and wound over the affected area especially in the shoulder and perinea area of the hindquarter (Figures: 1 and 2). The visceral (internal organs) of the four carcass posted did not show any pathological lesion.

Laboratory Diagnosis:

Fresh scraping of the scab was made with scalpel blade, placed on a glass microscope slide with drops of sterile water. The slide was allowed to air dry and then stained with a Giemsa stain. It was examined with oil immersion under the microscope. The organism appears as gram-positive cocci. Superficially, within the crust there are many 1-2 um, paired coccoid bodies (zoospores) arranged in rows to form long, branching, filamentous structures (Hargis and Ginn. 2007). Hargis and Ginn. (2007) also observed that cultures at some early stage show the presence of solid, branching, Gram-positive filaments, which later develop into chains of either round or oval coccoid elements. Each oval element has its long axis situated across the filament and elongates to produce a transverse bar, which becomes dumb-bell shaped and then divides into two coccoid-elements. Filaments of more than two elements in width have not been observed in the process of formation, but are found in smears(Hargis and Ginn. 2007)..

Differential Diagnosis:

The following conditions are similar and seen as Proliferative/Hyperkeratotic Skin Lesions in Cattle:
Dermatophytosis: caused by *Trichophyton* sp., *Microsporum* sp. –Appear in chain or disassociated arthrospores and hyphae they are located in the stratum corneum, hair follicles and hairs, "Domino effect" serially damaged hair follicles damaged by necrotizing and pyogranulomatous folliculitis suggests dermatophytosis.
Ectoparasitism**:** Demodex sp., Psoroptes sp.- They are elongate mites, measuring 40 x 250-300 um (shorter and longer forms exist), seen are keratinous debris plugging follicles, and variable numbers of mites
Pustular dermatitis (impetigo; subcorneal pustular dermatosis; pemphigus foliaceous): Seen are pustules with varying inflammatory cells, zoospores not present

Viral dermatitis: Contagious pustular dermatitis (parapoxvirus); lumpy skin disease (capripoxvirus) – Present are Intracytoplasmic, eosinophilic inclusion bodies, located within epithelial cells
Photosensitization: Parakeratotic hyperkeratosis, acanthosis, apoptotic cells are seen scattered through the dermis, with dermal hyperemia, edema and perivascular mononuclear cellular infiltrate
Zinc-responsive dermatosis: Parakeratotic hyperkeratosis extending into hyperplastic follicular infundibula is characteristic

Treatment:

The affected animals were treated with Terramycin Long acting (20mg/kg), and the lesion disappeared and they became healthy, only to reappear the following raining season, when it now defile the same therapeutic approach. The dosage of the drug was then increased and given for five days which also was not effective**.**

II. Discussion

Under conditions simulating traditional husbandry, a single intramuscular dose (20 mg/kg) of Terramycin long-acting was found to be efficacious in treating different grades of bovine dermatophilosis (Ilemobade *et al* 1979), as was observed in the first attempt in this experience. The reoccurrence of this disease the following raining season presupposes a carrier factor or reinfection (Brian and Larry 2013) in these animals which made the disease to resurface when the condition became conducive (Meseret and Sefinew 2011).This agrees with Ogwu *et al*., (1981), observation in the use of this universally acclaimed, most effective drug of choice for this disease. The ineffectiveness of the same therapeutic approach in this case could also indicate resistance.

The Ndama breed, her calf and the Muturu breed survival in the same environment where the Fulani breed showed zero tolerance indicates a better genetic potential. The Ndama calf is a cross between Ndama and Fulani breed, this also indicate a genetic product that is equally resistant to the disease, the advantage of which can be taking in breeding selection, especially in the tropic where this disease is prevalent.

III. Conclusion And Recommendation

Production of livestock generally in Joseph Ayo Babalola University has a good prospect especially with the number of qualified livestock personnel in the institution. Good management and the location of the institution where fresh pasture can be easily accessed are added advantage.

The treatment of dermatophilosis still remains a matter of great concern owing to the recurrence of the disease and the difficulties to cure it using antibiotics by the parenteral route. Terramycin long-acting (TLA) was described to be the only drug effective in parenteral treatment of dermatophilosis (Ilemobade et al., 1979), while 2 years later, it was claimed that animals treated with TLA became reinfected even after recovering from the disease (Ogwu et al., 1981), as also observed in this case. However a strategic preventive program can be adopted, especially during the raining season.

With the above breeding experience, cattle resistant to Dermatophilous infection can be easily bred for better adaptability and production, especially by embarking on breed selection program using resistant breed to cross our indigenous productive non resistant breeds, as was achieved here with Ndama and White Fulani cross.

References

[1]. Brian Faris and Larry Hollis, (2013) Dermatophilosis in Sheep and Goats, Kansas State University,
[2]. Hargis AM, Ginn PE: The integument. In: Pathologic Basis of Veterinary Disease, eds. McGavin MD, Zachary JF, 4th ed., pp. 1181-1183. Mosby Elsevier, St. Louis, MO, 2007
[3]. Ilemobade AA., Gyang EO., Bida SA., Addo PB.. (1979) Cure of Dermatophilus congolensis infection in cattle by long-actingTerramycin. Res Vet Sci. 27(3):302-5.
[4]. James F. X. Wellehan., Christine Turenne., Darryl J. Heard., Carol J. Detrisac., and Jeffrey J., O'KelleyM (2004) Dermatophilus Chelonae in a King cobra (Ophiophagus Hannah) Journal of Zoo and Wildlife Medicine 35(4):553-556. doi: http://dx.doi.org/10.1638/03-099
[5]. Karen A. Moriello (2013) The Mercks Veterinary manual
[6]. Masters AM, Ellis TM, Carson JM, Su-therland SS, Gregory AR. (1995) Dermatophilus chelonae sp. nov., isolated from chelonids in Australia. Int J Syst Bacteriol. 45(1):50-6.
[7]. Meseret Admassu and Sefinew Alemu., (2011) Study on Clinical Bovine Dermatophilosis and its Potential RiskFactors in North Western Ethiopia. InternationalJournal ofAnimaland VeterinaryAdvances 3(1): 33-36, 2041-2908
[8]. Ogwu D., Alhaji S., Osori D.I.K., (1981) Effectiveness of long action Terramycin injectable solution, in the treatment of streptothricosis in cattle. British Veterinary Journal 137, 585–589.

Adedeji O. A. "Streptothricosis (Dermatophilosis) infection in cattle." IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS), vol. 10, no. 8, 2017, pp. 41–43.