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BOVINE CUTANEOUS EOSINOPHILIC GRANULOMA (SHIKA ULCER): A RETROSPECTIVE OBSERVATION

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ABSTRACT

A retrospective study on the prevalence of Bovine Cutaneous Eosinophilic Granuloma referred to as “Shika Ulcer” in a livestock research farm is reported. A total of 50 cases (6.4%) out of 783 (93.6%) bovine cutaneous conditions were diagnosed at the Animal Health Unit of the Institute during a ten year period. Of the 50 clinical cases seen, 52.0% were in Bunaji (White Fulani), 22.0% in the Friesian – Bunaji crosses, 16.0% in Bokoloji, and 10.0% in N’dama breed. BCEG showed remarkable seasonality in prevalence with over 80% of cases occurring during the rainy season. Shika ulcer also showed sex bias in prevalence with 86.0% of the cases occurring in the cows and 14.0% in the bulls. The reverse was however the case for age predisposition with 86.0% occurring in the adults and 14.0% in yearlings. The mean infected-Breed value is 23.66 ± 1.93 ($P < 0.05$), mean infected-sex 24.360 ± 2.06 ($P > 0.05$), infected-Age 24.32 ± 2.08 ($P < 0.05$) and Infected-Month 18.9 ± 2.08 ($P > 0.05$). According to this study, the important significant factor in the prevalence of this condition is Breed and Age as the P value is less than 0.05. Significant statistical difference was observed in the age and breed predisposition ($P < 0.05$) for this condition in the study area.

Key words: Cutaneous Eosinophilic Granuloma (Shika Ulcer), Season.

INTRODUCTION

Bovine Cutaneous Eosinophilic Granuloma (BCEG) locally referred to as “Shika Ulcer”, is a hypersensitive parasitic lesion characterized by well-circumscribed, raised, firm, alopecic, erythematous plaques and yellowish to pink coloration accompanied by a sero-hemorrhagic discharge (Adegboye, 1972; Sanderson *et al.*, 1990). It is pruritic and frequented with *Musca spp.* Infected animal continuously lick the affected area. Normal to near normal body temperatures, pulse and respiratory rates are observed in this condition (Saidu *et al.*, 1986).

The disease is of most importance for its role in causing economic loss through damage of hides and skin (Oduve, 1975). This is caused by infective larval (L3) stage of *Habronemamuscae* nematode and is transmitted by flies. The larvae are deposited on injured tissue (Yarmut *et al.*, 2008). This disease has also been reported to be more common in feline and canine species where they manifest in three forms namely: *Eosinophilic granulomas*, *eosinophilic plaque*, *indolent ulcer* (Earnest, 2008).

A common cause in cat is thought to be flea allergy, but atopy, a form of allergy triggered by inhaled environmental allergens such as pollens and dust, and food allergies also can cause EGC lesions in cats. An allergic response to mosquitoes is also suspected (Earnest., 2008), but in bovine, Cutaneous Eosinophilic Granuloma has been reported to be caused mainly by *Habronema spp* of nematode and transmitted by biting flies such as *Musca spp*, *Stomoxys spp* etc. (Adegboye, 1972; Saidu *et al.*, 1986). In horses and other equidae similar condition has

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been reported and is known as Habronemiasis (also called summer sores, granular dermatitis, jack sores, bursati, and other terms). It is a complex parasitic disease of donkeys, horses, mules, zebras and dogs. And is most commonly encountered in temperate, sub-tropical, and tropical regions (Gasthuy *et al.*, 2004) This disease is caused by the invasion of *Draschia megastoma*, *Habronema majus* (*H. microstoma*), and *H. muscae* nematodes. The pathogenic nematode larvae are transmitted by flies (house flies, face flies, and stable flies) while feeding on pre-existing wounds or on moist mucus of the equid's anatomy, including genitalia, eyes, nostrils, lips, and prepuce (Herd *et al.*, 1981).

The first documented report of the occurrence of bovine cutaneous eosinophilic granuloma in Nigeria appears to be that of Adegboye (1972) followed by Oduye (1975) and Schillhorn Van Veen and Barnes (1978). Since then limited or no research was conducted in this regard. It is on this basis that this retrospective study was conducted to evaluate the economic importance of this condition as it affects the hides and skins and overall performance of Nigerian cattle and to further encourage detailed research study on this condition in the country.

MATERIALS AND METHODS

Study Location.

This study was conducted at National Animal Production Research Institute, Ahmadu Bello University, Shika, Zaria, Nigeria. Shika, is located in the Northern Guinea Savannah between Latitude 11°N and 12°N, and between Longitudes 7°E and 8°E at the elevation of 650m above sea level. The climate is characterized by average annual maximum and minimum temperatures of $31.0 \pm 3.2^\circ\text{C}$ and $18.0 \pm 3.7^\circ\text{C}$, respectively. It has a monthly average rainfall of 148.1 ± 68.4 (69.2-231.9) mm during the raining season (May-October).

A ten year data from the Animal Health records of the institute was used for the study. It was analyzed using T-Test and simple descriptive statistical analysis.

RESULTS

A total of 50 (6.4%) clinical cases of Bovine cutaneous eosinophilic granuloma were reported out of 783 (93.6%) cutaneous clinical cases diagnosed at the Institute. Of the 50 cases, 26 (52.0%) were in Bunaji (White Fulani), 11 (22.0%) in Friesian-Bunaji Crosses, 8 (16.0%) in Bokoloji and 5 (10.0%) in N'dama. The disease showed higher occurrence rate during raining season with 28 (56%) clinically diagnosed cases. The disease equally showed higher prevalence in cows 43 (86%) than in bulls 7(14%) (Table 1, Figures 1, 2, 3 and 4). 41 (82%) occurrence was recorded in adult, 9 (18%) in yearlings and 0% in young cattle.

Table 1: Influence of Age, Breed, Sex and Season on Frequency and Percentage of Occurrence of Bovine Cutaneous Eosiniphilic Granuloma

S/N	CATEGORY		FREQUENCY	PERCENTAGE (%)
	Type	Group		
1	AGE	a) Adult	41	82
		b) Yearlings	9	18
2	BREED	a) Bunaji	26	52
		b) Friesian-Bunaji Crosses	11	22
		c) Bokoloji	8	16
		d) N'dama	5	10
3	SEX	a) Male	7	14
		b) Female	43	86
4	SEASON	a) Raining (May - Oct)	32	64
		b) Dry	18	36

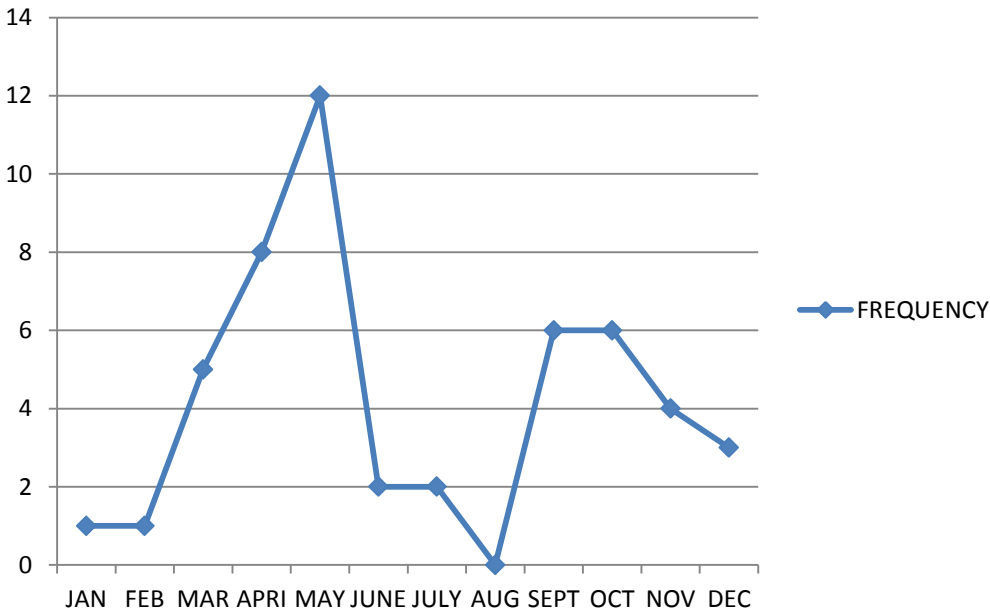


Figure 1: Monthly Frequency of Bovine Cutaneous Eosiniphilic Granuloma

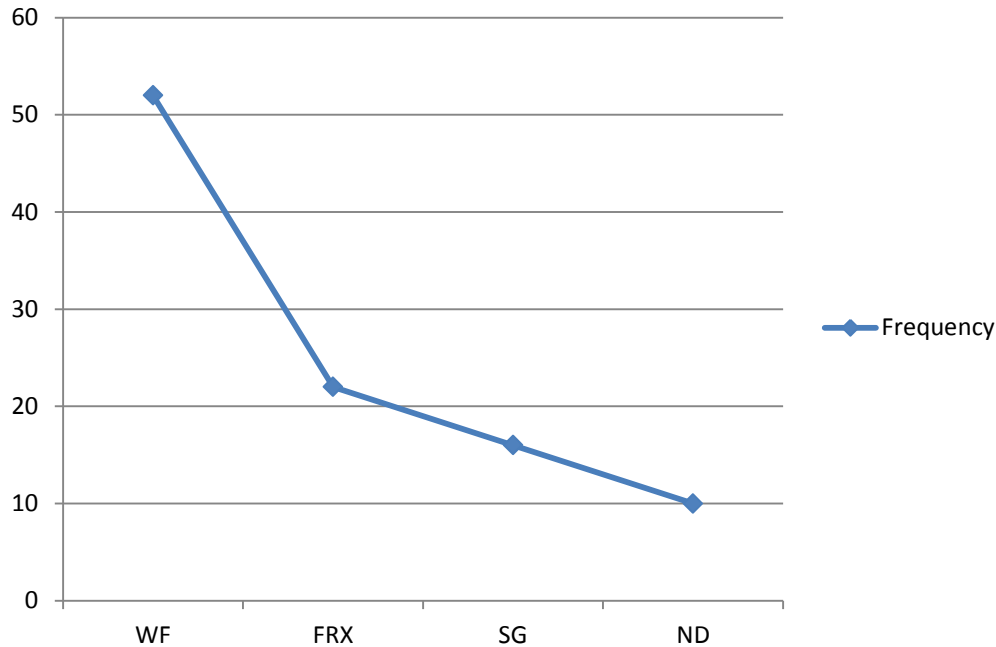


Figure 2: Effect of Breed on Frequency of Bovine Cutaneous Eosiniphilic Granuloma

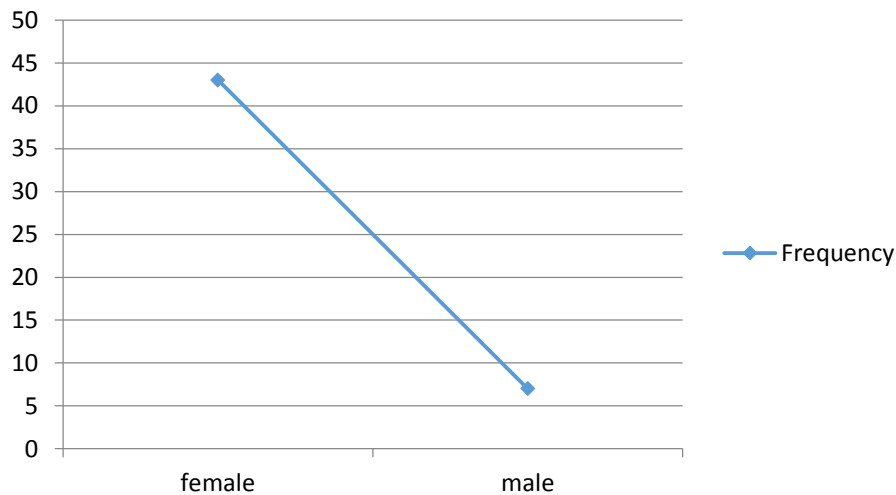


Figure 3: Effect of Sex on Frequency of Bovine Cutaneous Eosiniphilic Granuloma

The predisposing factors were also analysed. The mean infected-Breed value is 23.66 ± 1.93 ($P < 0.05$), mean infected-sex 24.360 ± 2.06 ($P > 0.05$), infected-Age 24.32 ± 2.08 ($P < 0.05$) and Infected-Month 18.9 ± 2.08 ($P > 0.05$). According to this study, the important significant factor in the prevalence of this condition is Breed and Age as the P value is less than 0.05.

Bovine cutaneous eosinophilic granuloma

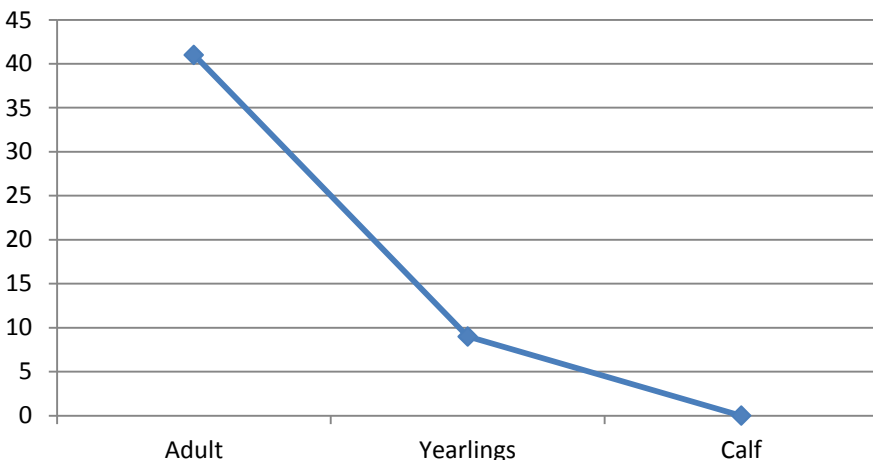


Figure 4: Effect of Age on Frequency of Bovine Cutaneous Eosiniphilic Granuloma

DISCUSSION

Certainly, a lot is yet to be known concerning this condition in cattle in Nigeria. This study shows that BCEG is considerably of economic importance considering the damage it causes to hides and skin; distraction on the animals' side from constant licking due to intense pruritus preventing it from adequately grazing/feeding (Adegboye, 1972).

Preston in Adegboye 1972, hypothesized that the predisposing factor to this condition is break in skin continuity (any form) which is then harbored by flies. It had the highest occurrence during rainy season which could be associated with increased population of flies suspected to be the major transmitting vector(s). The disease equally showed higher prevalence in cows than in bulls. This could however be as result of the higher female (cow population) in the overall cattle population in the Institute. 41 (82%) occurrence was recorded in adult (Older than 2 years), 9 (18%) in yearlings and 0% in calves.

The lesion which always starts as a small wound and gradually enlarges in a circular or elliptical pattern ranges from 3 – 10 cm in diameter and up to 5cm in thickness is usually accompanied by sero-haemorrhagic discharge with intense pruritus. They were observed to have a predilection for the lower lateral abdominal wall and flank regions. The wound that is not generally given any attention may be self-limiting but generally chemotherapeutic management of this condition using Ivomec® Rolenol® or Sambezole® was not very successful. However, complete surgical excision of the granulomatous lump has been reported to be effective. Routine ectoparasite control measures to eradicate suspected vector flies (house flies and stable flies) and other biting insects appears the only effective preventive measure against this condition.

CONCLUSION AND RECOMMENDATION

This study shows that BCEG is of economic importance in livestock (Cattle) production in Nigeria. It has higher occurrence in wet season and affects animals mostly from 2 years above with predilection for lower abdominal wall and flank region. Break in skin continuity (through

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any form) remains the predisposing factor while transmission is by flies. Complete surgical excision was the only successful means of managing this condition,

Certainly, much is yet to be known in this condition in Nigeria, hence the need to further conduct an indebt research to confirm or ascertain the possible cause, transmission pattern, control measures and its economic significance in Nigeria.

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