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PREVALENCE AND INTENSITY OF ECTOPARASITES OF LIVESTOCK IN LAGOS, NIGERIA

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Abstract
Five areas in Lagos State, Nigeria (Ojo, Mushin, Ikorodu, Badagry and Ajeromi) were randomly sampled for ectoparasites of livestock. On 600 livestock (200 Cattle, 200 sheep and 200 goats), Ticks (*Amblyloma variegatum*) had 59.1% prevalence, Cattle lice (*Haematopinus eurystermus*) and (*Linognathus vituli*) both had a prevalence of 78.5% while Mites infestations with (*Sarcoptei scabei)* had 10.5% prevalence. Ticks had the highest geometric mean intensity of infection (660 ticks/ Lagos areas) while Mites had the lowest geometric mean intensity of infection (111 Scabs /Lagos areas). Prevalence and intensity of livestock ectoparasites was highest in Mushin and Badagry areas. Health education was carried out as a strategy to control the prevalence of ectoparasites in Lagos areas. There was compliance to the health interventions.

Key Words: Ectoparasites, Lagos, Ticks, Lice, prevalence, intensity.

Introduction
Ectoparasites are organisms of great significance which live on the surface of a bigger organism called the host and are dependent on the host for food, shelter and other basic things of survival to some extent (Rechav and Nutall 2000). Not only do they have direct effects on their host, they may also transmit pathogens to their host, serving as vectors of diseases (Parola *et al*., 2001). Livestock ectoparasites are organisms of veterinary importance and are usually arthropods in the classes' insecta and arachnida. They are the common cattle lice, ticks, fleas which are macroscopic, while mites are micro arthropods. They are all heamatophagous and this has serious veterinary implications (Kaaya *et al.*, 2000).

Cattle lice are of two different types: Cattle biting lice (*Bovicola bovis*) which live off the dry skin scales , hairs and scabs and Cattle blood sucking lice *Haematopinus euryternus* (short nosed Cattle lice) and *Linognathus vituli* (long nosed cattle lice) (George *et al.*, 1992).

Parasitic mites are blood feeders affecting a great variety of domestic animals (Campel and Lasley, 1985). Ticks are vectors of diseases. About 850 species have been described worldwide (Vrededoe, 2002). They consist mainly of the Argasid ticks (soft ticks) and Ixodid ticks (hard ticks) (El-Kammah *et al*., 2001). *Boophilus microplus* is the most successful Cattle tick worldwide (Sangwan et al., 2000).

Ticks transmit the widest variety of pathogens of any blood sucking arthropod including bacteria (*Borrelia burgdorferi*), rickettsiae, protozoa (*Babesia and Theilera species*) and viruses (Solomon and Mallew, 2001, Parola *et al..,* 2001). Ticks cause tick paralysis in children (Campel and Lasley, 1985).).

Blood sucking , heavy louse and tick infestations causes anaemia, abortions, lowered milk production, stunted growth, general unthriftness, respiratory diseases and death in livestock (Hungerford,1984).The cattle tick *Boophilus annulatus* spreads cattle tick, tick fever and Texas fever from one cattle to another (Knipling & Steelman, 2000). The common mites (*Sarcoptes scabies*) are blood feeders, tunnellers (Jensen, 2000) and also secrete an extreme irritating poison which causes immense

irritation (Van der geost *et al*., 2000). Mites cause a lot of damages to the hides of cattle by denuding the hair of the hide or forming scabs on the hide. This reduces the economic value of the cattle hide (Campel and Lasley, 1985).

This study is therefore a few of its kind in Lagos. This scientific information looks at the prevalence and intensity of common ectoparasites in selected areas of Lagos State and their significance. The two epidemiologic indices measures accurately infection parameters. This could provide mathematical techniques for the provision of theoretical framework to aid in the interpretation of field and experimental observations (Parola and Raoult 2001). Health education of livestock keepers was also carried out in this study.

Materials and methods

STUDY AREA

Lagos State, Nigeria is the former capital and a commercial nerve centre of Nigeria. Lagos has therefore attracted migrants from all over Nigeria and beyond. With a size of 3,577 square kilometers, 22% of the 787 square meters is made of lagoons and creeks. The State is located in Southwestern, Nigeria**.** The survey was carried out within Ojo, Ikorodu, Mushin, Badagry and Ajeromi Sub –urban areas of Lagos State. Ojo and Badagry are eastward, Mushin and Ajeromi are north central while Ikorodu is in north western Lagos. A major livestock trade post was visited in each of the areas.

SURVEY OF ECTOPARASITES

Ticks and Cattle lice were obtained from livestock post in each area.

Livestock post sampled were

Ojo - Alaba rago station opposite LASU
Mushin- Olorunsogo livestock ranch
Badagry-Akpovibe village livestock farm
Ajeromi- livestock market
Ikorodu- Main market livestock ranch

Cattle, sheep and goats were randomly selected and sampled for ticks and lice. Examination was performed on 40 cattle, 40 sheep and 40 goats in each area. Ticks and lice were handpicked using rubber hand gloves. The consent of the livestock keepers was also considered.

Mite scabs were collected using razor blades to cut the skin of cattle. Mites are micro arthropods and were not visible to the naked eye. The scabs were incubated in saline and then examined under an Olympus microscope, using x 10 objective. Examination was performed on same 40 cattle, 40 sheep and 40 goats randomly selected in each area. The consent of the livestock keepers was also considered.

Preservation of Ectoparasites The ectoparasites were preserved in properly labeled specimen bottles to indicate the type of parasite and the area they were collected from. The bottles each contained 70% alcohol.

EPIDEMIOLOGICAL AND STATISTICAL INDICES: The prevalence of livestock ectoparasites was expressed as the percentage of the number of livestock (Cattle, Sheep and Goat) with ectoparasites per population of livestock sampled (Anderson, 2004). The number of ectoparasites collected from the animals was used to estimate the intensity of infection.i.e intensity was estimated by direct counting (Anderson, 2004).This indicates the severity of disease symptoms. Geometric mean intensity is the mean number of parasite per host. This is calculated for the total host population including uninfected individuals. Chi Square x^2 was used to calculate the differences that exist in prevalence.

HEALTH EDUCATION: The livestock keepers were educated on how best to eliminate the ectoparasites and prevent against future infestations.

Results

TICKS: Ticks were found on livestocks in all the areas. Tick infestations on Sheep and Goats look less severe than in Cattle which had 68% prevalence rate. (Table 1). A total of 355 livestock were infected out of 600 (59.1%). (Table 2). Mushin had the highest prevalence of tick infestation on animals, out of 120 livestock, 99 (82.5%) had ticks. Livestock in Badagry area however had the highest tick geometric mean intensity, out of the 660 ticks collected, 164 (24.8%) were from this area. There was no correlation between prevalences and geometric intensities in the five areas and significant differences existed statistically. The biggest tick collected was 2cm long, olive green, bean shaped and glossy from a goat. Tables 1 and 2 shows the prevalences and geometric intensities of ticks in Lagos State.

Table 1: The Prevalences of livestock with ectoparasites in five areas of Lagos, Nigeria

Local Govt. Area.	Ticks /40 animals (%)			Mites/40 animals (%)			Cattle lice/40 (%)	
	Cattle	Sheep	Goat	Cattle	Sheep	Goat	Short nosed	Long nosed
Ojo	26(65)	12(30)	22(55)	3(7.5)	2(5)	1(2.5)	23(57.5)	12(30)
Badagry	35(87.5)	13(32.5)	12(30)	8(20)	5(12.5)	2(5)	32(80)	12(30)
Mushin	30(75)	36(90)	33(82.5)	9(22.5)	6(15)	0 (0)	14(7.3)	13(32.5)
Ajeromi	23(57.5)	33(82.5)	14 (7.3)	6(15)	4(10)	3(7.5)	12(30)	16(40)
Ikorodu	22(55)	32 (80)	12(30)	4(10)	5(12.5)	5(12.5)	16(40)	15(37.5)
Total	136/200 (68)	126/200 (63)	93/200 (46.5)	30/200 (15)	22/200 (11)	11/200 (5.5)	97/200(48.5)	68/200 (34)

N.B Short and Long nosed Cattle lice were examined simultaneously on the 40 cattle.
Df = 4 P < 0.05 differences in prevalences and intensities between areas are significant

Table 2: Number of ectoparasites collected per livestock in Lagos

Local Govt. Area.	Prevalence of Tick infested animals. (%) N=120	No of Ticks (%)	Prevalence of Mites infested animals (%)N=120	No of Mite Scabs (%)	Prevalence of lice infested Cattle short/long nosed (%) N=40	No of Lice (%)
Ojo	60 (50)	157(23.7)	6 (5)	12(10.8)	35 (87.5)	41(15.1)
Badagry	60 (50)	164(24.8)	18 (15)	27(24.3)	40 (100)	57(21)
Mushin	99 (82.5)	131(19.8)	15(12.5)	35(31.5)	27 (67.5)	81(29.8)
Ajeromi	70 (58.3)	111(16.8)	13 (10.8)	16(14.4)	25 (62.5)	40(14.7)
Ikorodu	66 (55)	97(14.6)	14 (11.6)	21(18.9)	30 (75)	52(19.1)
Total	355 (59.1)	660	63 (10.5)	111	157 (78.5)	271

N.B short and long nosed cattle lice occur together in some cattle
Df = 4 P < 0.05 differences in prevalences and intensities between areas are significant.

CATTLE LICE: Lice were found only on Cattle in all the areas. The long nosed louse *Linognathus vituli* and short nosed louse *Haematopinus euryternus* were identified. The prevalence of the short nosed louse was higher (Table 1). Both were found mainly on ears and eyelids. Overall prevalence of 200 Cattle sampled for lice in Lagos was 78.5%. Badagry area had Cattle with the highest lice prevalence (100%) but mean intensity was highest in Mushin area. The total number of lice collected were 271 and 81 (38.7%) were from Mushin area alone. Tables 1 and 2 show the prevalences and geometric intensities of Cattle lice in Lagos State.

MITES: Mite infestation in Lagos was 10.5%. Only 63 animals had mites altogether. Badagry area had the highest prevalence of mites on livestock, 18 (15%) (Table 1).The intensity of infection was however highest in Mushin area and this was followed by Badagry area. Tables 1 and 2 shows the prevalences and intensities of mites in Lagos State.

HEALTH EDUCATION: The health education was received with enthusiasm and sudden compliance. The livestock owners used diluted izal or dettol to treat wounds on the animals. The use of ascaricides such as arsenic dips, Gammexane powder and baths containing sulphur was introduced. The uses of these chemicals were however advised to be used only under strict veterinary supervision.

Discussion

Epidemiology is a quantitative science that deals with the study of disease behavior within populations of host. It is of great significance today with respect to human and livestock diseases (Anderson, 2004). The prevalence and intensity of infection are important epidemiologic indices. Prevalence is the percentage or proportion of the population that is infected with a specific parasite at a given point in time and is the most widely used epidemiologic statistics. Intensity is the parasitic burden or head count of parasites in the population at a given point in time. The mean number of parasites per host is denoted as the geometric mean intensity. It shows the severity of the disease symptoms (Anderson, 2004). Ticks were the most common ectoparasites, in this study. They were found on all soft tissue parts on livestock. They had the highest geometric mean intensity of infection. This was followed by Cattle lice, although Cattle lice had the highest prevalence on the livestock ectoparasites.

Mushin and Badagry areas were the worst affected by livestock ectoparasites.That of Mushin area could be attributed to sanitary conditions and overcrowding, while the condition in Badagry area, speaks more of intense overcrowding of livestock which makes ectoparasites to be easily transmitted from one animal to the other. These attributed to the high intensities of ticks and cattle lice in this area.Ojo and Ikorodu areas appeared to be the least affected by ectoparasites. Stocking density of livestock was lowest in Ikorodu area. Overcrowding of livestock and bad sanitary conditions appears to be responsible for spread of ectoparasites.Control of ectoparasites is very eminent to reduce their spread and improve hygienic meat consumption by humans.

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