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PREVALENCE OF HOOKWORM SPECIES AMONG BUTCHERS IN AKURE METROPOLIS

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ABSTRACT

The prevalence of hookworm species among butchers in Akure metropolis was carried out by collecting 200 fecal specimens from four different abattoirs within Akure Metropolis. The specimen was examined by iodine preparations for a clearer picture of the eggs and formol-ether technique. The result obtained from this study showed that there was significant difference between ($P < 0.05$) hookworm infection and gender distribution with masculine gender accounting for an infectivity rate of 71.4% while the female gender shows infectivity rate of 28.6%. It was equally observed the hookworm infection usually existed solely or alongside with other helminthes with infectivity rate of 5.5%.

Keywords: Hookworm, Butchers, Akure

PRÉVALENCE DE L'ANKYLOSTOMIASE CHEZ LES ESPÈCES EN METROPOLIS BOUCHERS AKURE

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Résumé

La prévalence de l'ankylostomiase chez les espèces de bouchers Segou Metropolis a été effectuée par la collecte de spécimens de feecal 200 quatre abattoirs différents au sein de Segou Metropolis. Le spécimen a été examiné par l'iode les préparatifs d'une image plus claire de l'oeufs et le formol-éther technique. Le résultat de cette étude montre qu'il y a une différence significative entre ($P < 0,05$) et de l'ankylostomiase avec répartition par sexe masculin de la comptabilisation d'une infectiosité rare de 71,4 % tandis que le taux d'infectivité genre montre féminine de 28,6 %. Il a également pu être observé les ankylostomias existait habituellement uniquement ou avec d'autres taux d'infectivité helminthes avec 5,5 %.

Mots-clés: l'ankylostome, bouchers, Segou

INTRODUCTION

The synonymous of hookworm infections and trade of animal husbandry and butchery dates back to the early days of civilization, the correlation between the two was not clear enough until the 1880's. Butchers are people who slaughters or dresses the flesh of edible animals for sale and for food. Most of their activities in the tropics are carried out in an unwholesome manner, thus, predisposing them to numerous microbiological and parasitic infections paramount of which is hookworm infection (1).

Hookworm is a parasitic nematode worm that lives in the small intestine of its host, which may be a mammal such as a dog, cat or human. Two species of hookworm commonly infects humans, *Ancylostoma duodenale* and *Necator americanus*. Hookworms are bilateral, meaning that it can cut in half, the worm would be the exact same on each side. *Necator americanus* predominates in the Americas, Sub-Saharan Africa, Southeast Asia, China and Indonesia, while *A. duodenale* predominates in the Middle East, North Africa, India and (formerly) in Southern Europe (2, 3).

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MATERIALS AND METHODS

Sample Collection: Fresh faecal samples were collected from four abattoirs within Akure metropolis. The sex and age of the patients were collected along side the samples. The specimens were examined at the Parasitology Laboratory unit of the Department of Microbiology, OAUTHC, Ile-Ife and where delay is anticipated, they were preserved and fixed with warm formalin.

Ethical Consideration: informed verbal consent of the recruited individual was obtained

Sample Analysis: Examination of the Faecal Sample: The samples were analyzed according to methods described by Arora (4)

Data Analysis: SPSS statistical analysis used were ANOVA, Cumulative frequency.

RESULTS

Out of 200 butchers examined in all the four abattoirs, 42(21%) were tested positive to hookworm infection only as shown in table 3 out of 30 (71.4%) were male and 12 (28.6%) were female. The statistical analysis of these result showed that there was significant difference ($P<0.05$) between hookworm infection and gender distribution as shown in table 2. This shows that hookworm infection is male dominated.

TABLE I: GENDER DISTRIBUTION AMONG BUTCHERS IN AKURE METROPOLIS

Gender	Abattoirs A	Abattoirs B	Abattoirs C	Abattoirs D	Total	%
Male	39	38	50	50	177	88.5
Female	11	12	--	--	23	11.5
Total	50	50	50	50	200	100

TABLE 2: DISTRIBUTION/INCIDENCE OF HOOKWORM INFECTIONS

Positivity/Negativity percentage infectivity %	Gender	
42+ve	30 male	71.4
	12 female	28.6
158-ve	145 male	91.8
	13 female	82.2
Summation	200	200

The result also revealed that 26(13%) patient tested positive to helminthes only while 11(5.5%) tested positive to both hookworm and helminthes. The remaining patients were negative to both infections 121(60.5%) as shown in table 3.

This study also showed that age group 28-37 years old were mostly infected with hookworm with

infectivity rate of 30.0% followed by age group 18-27 years and 38-47 years with infectivity rate of 26.5% and 25.5% respectively. Age 48-57 years showed the least infectivity rate of 18.0% as shown in table 4.

The statistical analysis of the result showed that there was no significant difference ($P<0.05$) between age and hookworm infection.

TABLE 3: DISTRIBUTION OF HOOKWORM AND OTHER HELMINTHES INFECTIONS

Tested patient	Abattoir A	Abattoir B	Abattoir C	Abattoir D	Total	%infectivity
Positive to hookworm only	18	13	5	6	42	21
Positive to helminthes only	9	11	3	3	26	13
Positive to both hookworm and Helminthes	3	5	1	2	11	5.5
Positive to both hookworm and Helminthes	20	21	41	39	121	60.5
Total	50	50	50	50	200	100

TABLE 4: INFECTIVITY RATE OF HOOKWORM BY AGE DISTRIBUTION

Age	Abattoir A	Abattoir B	Abattoir C	Abattoir D	Total	%
18-27	11	18	15	9	53	26.5
28-37	19	12	13	16	60	30.0
38-47	13	13	13	12	51	25.5
48-57	7	7	9	13	36	18.0
Total	50	50	50	50	200	100

DISCUSSION

This study provides a data on prevalence of hookworm among butchers within Akure metropolis. The overall prevalence rate of hookworm infection among all the butchers was 21%. This infectivity agrees with previous report by other researchers (5, 6) that the prevalence is usually connected with poor sanitation, poor personal and environmental hygiene.

As evidenced in my study, there was a significant difference between hookworm infection and gender distribution because the trade is mainly male dominated as it required physical strength and long working hours. Moreover, based on the result obtained from the study, hookworm infection is common to all ages represented in this trade. Age group 28-37 years and 18-27 years with prevalence of 30.0% and 26.8% respectively were mostly infected with hookworm. This is so because these are active age of these groups of people that are usually involve in the trade and also due to the nature of the work in which majority of them walk barefooted on unhygienic and dirty environment of the abattoir. With an estimated 740 million individual infections

worldwide, hookworm is a major public health concern in our world today. While hookworm infection may not directly lead to mortality, its effects on morbidity demand immediate attention as evidenced in my case study. As can be seen, 42 positive cases (21%) were encountered which numerically might be insignificant but looking at the overall infection rate is very significant.

Most of public health concerns have focused on children who are infected with hookworm. This focus on children is largely due to the large body of evidence that has demonstrated strong associations between hookworm infection and impaired learning, increased absences from school, and decreased future economic productivity. However, as evidenced during the course of this study, downturn of economic productivity among adult cannot be overemphasized as almost all butchers in my study has had occasionally visited the hospital for illnesses that end up been treated with anti-helminthes.

Conclusion: This study not only buttresses, but also advocates for mass de-worming of both young and

old to reduce hookworm burden which is against the resolutions of the 54th World Health Assembly of 2001 demanding member states to attain a minimum target of regular de-worming of at least 75% of all at risk school children only, by 2010 (7). Hookworm infection is generally considered to be asymptomatic and this is attested to in this study, but as Normal Stoll described in 1962, hookworm is an extremely dangerous infection because its damage is silent and insidious. There are general symptoms that an individual may experience soon after infection such as ground-itch, which is an allergic reaction at the site of parasitic penetration and entry, is common in patients infected with *N. americanus*. This is also evidenced during the course of any interaction with the understudied butchers. The prevalence of the infection among masculine gender as seen in this study is worthy of note and this may be accounted for based on the fact that the trade is mainly male dominated as it requires physical strength and long working hours. It is also of importance to stress the point that though hookworm is prevalent among butchers due to the mode of infection of hookworm coupled with unwholesome manner the trade is practice, other intestinal helminthes infections are often associated with the butchers, this is also evidenced in this study.

Recommendations

Since the infective larvae develop and survive in an environment of damp dirty, particularly sandy and loamy soil. They cannot survive in clay or muck. The main lines of precaution are those dictated by sanitary science:

- I. Do not defecate outside latrines, toilets etc
- II. Do not use human excrement or raw sewage as manure/fertilizer in agriculture
- III. Deworm pet dogs-canine and feline hookworms rarely develop to adulthood in humans (*Ancylostoma caninum*, the common dog hookworm, occasionally develops into

adult to cause eosinophilic enteritis in people). But their invasive larvae can cause an itchy rash called cutaneous larva migrans.

- IV. Avoid trekking barefooted in and around abattoir
- V. Butchers should ply their trade with utmost sanitary
- VI. Mass deworming exercise should be extended to adults
- VII. Butchers should desist from eating raw animal flesh and consumers should eat only properly beef
- VIII. In endemic areas, people should avoid eating raw fruits and vegetables that cannot be peeled. Only bottled water, filtered water, or water that has been boiled for atleast one minute should be taken.
- IX. Early detection and treatment of hookworm is essential for all human mostly to prevent anaemia in pregnant women and children
- X. Good hygiene and hand washing after using toilet will prevent self infection in a person already infected with tapeworms
- XI. Improvement of living conditions, especially safe treatment of sewage used for farming should be aimed at.
- XII. Health education programs often stressing the importance of preventive techniques such as: always wearing shoes, washing your hands before eating and staying away from water/area contaminated by human and animal faeces.

Therefore, it is strongly advised that butchers and animal farmers should adhere strictly to the following recommendations to avoid been predisposed to hookworm infection with resultant effect of illnesses, frequent hospital visitation/admissions and loss of gross domestic products.

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