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PARASITIC DERMATOSES AS SEEN AT THE UNIVERSITY OF BENIN TEACHING HOSPITAL (UBTH), BENIN CITY IN NIGERIA

[1]Airauhi, LU; [2] Onunu, AN [2] Otabor, CU
Departments of [1]Microbiology, [2]Medicine, School of Medicine, College of Medical sciences, University of Benin, Nigeria
Correspondence: DR LU AIRAUHI, Department of Medical Microbiology, School of Medicine, College of Medical Sciences, University of Benin, Nigeria.

The epidemiology and associated risk factors for parasitic infections causing dermatologic lesions were studied retrospectively over a five – year period (1993-1998) in Benin City Nigeria. The study population comprised one hundred and fifty six patients (84 males and 72 females) out of a total of 1665 patients who attended the dermatology clinic at the (UBTH) during the period of study. Dermatological manifestations of diagnosed parasitic infections were recorded and related to the occurrence of parasite species in microscopically studied specimens collected form patients. 9.4% of patients seen presented with various skin diseases of parasitic origin. The most prevalent parasitic disease seen was scabies 115 (73.7%); others were onchodermatitis 16(10.3%), myasis 11(7.1%), wuchereriasis (elephantiasis) 9(5.8%), cutaneous larva migrans 3(1.9) and pediculosis pubis 2(1.3%). Infection was prevalent in all age groups. Overall prevalence revealed that patients aged 15 years and below had the highest infection rate of 60 (38.5%) while the lowest infection occurred among those who were aged 60 years and above. Dermatologic parasitoses presented as chronic persistent infections, which were sometimes severe especially in children. Infection rate was significantly higher among males (53.8%) than females (46.2%) ($P<0.05$), symptoms included generalized skin rashes, for most infections, leopard skin in onchodermatitis and marked discomfort and disfigurement in elephantiasis. The major risks associated with these parasitic infections include socioeconomic status, age and human behavioral factors.

Key words, Parasite, dermatologic lesions, Nigeria.
Running titles, Dermatologic manifestations of Parasitoses in BeninCity.

INTRODUCTION

Although the skin is a protective organ it frequently succumbs to the attack of microorganism, parasites and arthropods (1) it has been reported that the continuous exposure of the skin to the environment makes it a common portal of entry for most parasites (2). Such point of entry could be associated with local tissue reaction and dermatologic changes, besides cutaneous lesions, parasites can produce systemic diseases in humans (2).

Some parasite species documented in association with dermotologic lesions include *Onchocerca volvulus* in biopsied tissue studies in Benin city, Nigeria (3). Onchocerciasis has been studied extensively in Nigeria and an alternative diagnostic method for onchocerciasis other than skin snipping has been described (4), *Paragonimus westermani* was demonstrated in cutaneous lesions in Japans (5)

Other studies on parasitic dermatoses include cutaneous myasis due to *Cordylobia anthrophga* in Ilorin (6); wound myasis due to *Cochlomyia hominivorus* in Libya (7). Although these surveys represent significant advances in the research on parasitic dermatoses, no study on parasitic diseases manifesting dermotologic lesions has been conducted at the UBTH, Benin City, Nigeria.

We noted increasing cases of dermatologic manifestation of parasitic infections in our center and to support the development of a strategy for the control of parasitic diseases, we undertook this study, designed to document common parasitic dermatoses seen in Benin City their epidemiology and associated risk factors.

MATERIALS / PATIENTS AND METHODS

STUDY AREA

This study was conducted at the UBTH, which is a public population based hospital in Benin City, Nigeria with a well-defined catchment area.

The University of Benin Teaching Hospital (UBTH) Benin City is a 400-bedded tertiary hospital that caters for the needs of Edo and Delta State. It offers specialist services in various medical disciplines including Dermatology. It is located in the tropical rainforest belt with high humidity, high annual rainfall and has an average temperature of 32°C.

METHOD

Records of patients managed at the consultant outpatient Dermatology clinic over a six-year period from January 1993 and December 1998 for parasitic dermatoses were retrospectively analyzed. Information obtained form such records included personal biodata, clinical features and diagnoses. As a matter of routine, ectoparasites are treated overnight in 10% potassium hydroxide and examined microscopically as already described by Belding, 1964(8). Similarly biopsy tissues were processed in the Shandon Elliot automatic tissue processor, sectioned and stained in Haematoxylin and Eosin and subsequently examined microscopically.

Patients were classified into classes 1-5 on the basis of socioeconomic status of patients and of parents in cases of children from data available in the hospital records as earlier described (9):

1. Upper and middle class
2. Intermediate class
3. Skilled workers and Clerical workers class
4. Semi skilled workers class
5. Unskilled workers class

STATISTICAL ANALYSIS

For the purpose of analysis, the patients were subdivided into age groups as shown below

Patients	Age in year
Children	15 year and below
Young Adults	16 – 25
Adults	26 – 40
Middle Aged	41 – 59
Aged	60 years and above

The chi-square (x^2) test was used in assessing the inter or intra group differences in the proportion of observations that were assessed. Probability of less than 0.05 was considered significant (10).

RESULTS

A total of 156 (9.4%) patients had parasitic infections from among the 1665 patients seen at the dermatology clinic during the period of study. Diagnosis of parasitic dermatoses was based on characteristic clinical features and microscopic identification of parasites recovered form the lesions. The following parasites were isolated from the samples submitted to the laboratory for investigation.

Sarcoptes scabiei species was identified based on the characteristic morphological features previously described by Soulsby, 1982(11). Larva of *Cordylobia anthropophaga* was recognized based on characteristic posterior spiracle (12) while *Pthirus pubis* was identified as described by Belding (8).

Helminth parasites were seen in histological skin sections of biopsies and were due to filarial worms namely: *Onchocerca volvulus*, these were seen as cross sections of he parasites revealing characteristic somatic muscles, cuticular annulations and other diagnostic features consistent with those already described(12). The other

filarial worm infection was due to *Wuchereria bancrofti* appearing characteristically revealing cuticular bosses and somatic muscles in tissue sections (12).

The majority of infections were due to *Sarcoptes scabiei* 73.7%. The pattern of infection for other parasite species encountered is as follows *Onchocerca volvulus* 10.3%, *Cordylobia anthropophaga* 7.1%, *Wuchereria bancrofti* 5.8%, *Ancylostoma caninum* 1.9% and *Phthirus pubis* 1.3%. Thus *Sarcoptes scabiei, Onchocerca volvulus, Cordylobia anthropophaga* and *Wuchereria bancrofti* are important human parasite species manifesting dermatologic lesions in our center. The relative species prevalence of parasitic infection manifesting dermatologic lesions is presented in Table 1.

TABLE 1: RELATIVE PREVALENCE OF PARASITIC INFECTION MANIFESTING DERMATOLOGICAL LESIONS.

Causal Parasite Species	Disease class	Relative species prevalence		Overall relative species Prevalence
		Males No%	Females No%	No%
Sarcoptes Scabiei	Scabies	67(43.0[a])	48(30.8[a])	115(73.7)
Onchocerce Volvulus	Onchodemartitis	6(3.8)	10(6.4)	16(10.3)
Cordylobia Anthropophage	Myasis	5(3.2)	6(3.8)	11(7.1)
Wuchereria Bancrofi	Elephantiasis	6(3.8)	3(1.9)	9(5.8)
Ancylostoma Caninum	Cutaneouss larva migrans	0(0.0)	3(1.9)	3(1.9)
Pthirus pubis	Pediculosis pubis	0(0.0)	2(1.3)	2(1.3)
Total		98(53.8[a])	72(46.2[a])	156(100)

[a]Values differ significantly from each other $p<0.05$

The prevalence of *Sarcoptes scabiei* increased with decreasing age in both sexes with an overall prevalence of scabies of 43.0% in males and 30.8% in females. The incidences of infection as they occurred in the various age groups were expressed in absolute numbers and percentages. Of the 73.7% prevalence of scabies, 19.2% and 12.8% were from males and females respectively among patients aged 0 – 15 years old.

Filariases were due to *Onchocerca volvulus* and *Wuchereia bancrofti*. Of the 16(10.3%) cases of onchocerciasis 6(3.8%) and 10(6.4%) were recorded among male and female subjects respectively. The pattern of onchocerciasis reveals that infection was recorded among males aged between 41 – 49 years while for females infection occurred among subjects aged between 26 and over 60 years of age. The prevalence pattern of infection for wuchereriasis is similar to that for onchocerciasis in males while for

females a prevalence infection rate of 3(1.9%) was recorded among subjects aged 60 years and above.

The overall prevalence of cutaneous myasis due to *Cordylobia anthropophaga* was 11(7.1%), of this 5(3.2%) were seen in males aged 0-15 years of age, in females a prevalence 4 (2.6%), 1(0.6%) among those aged 26-40 years and 41-59 years respectively. The number and parasite species seen in-patients according to age and sex are presented in Table 2.

Patients from lower social class were significantly more infected than those from higher class ($p<0.05$).

TABLE 2: No. and parasite prevalence (%) in patients seen at the dermatology clinic by sex and age in Benin City, Nigeria, 1993-1998.

	No of patients seen							
Ages (years) Males	Cases Seen	No with parasitic Disease	*S. scabiei*	*O. volvulus*	*C. anthropophaga*	*W. bancrofti*	*A. caninum*	*P. pubis*
0-15	139	35(22.4)	30(19.2)	-(0.0)	5(3.2)	-(0.0)	-(0.0)	-(0.0)
16-25	151	16(10.3)	16(10.3)	-(0.0)	-(0.0)	-(0.0)--	-(0.0)	-(0.0)
26-40	146	10(6.4)	10(6.4)	-(0.0)	-(0.0)	-(0.0)	-(0.0)	-(0.0)
41-59	140	19(12.2)	7(4.5)	6(3.8)	-(0.0)	6(3.8)	-(0.0)	-(0.0)
>60	156	4(2.6)	4(2.6)	-(0.0)	-(0.0)	-(0.0)	-(0.0)	-(0.0)
Total	734	84(53.8)	67(43.0)	6(3.8)	5(3.2)	6(3.8)	-(0.0)	-(0.0)
Females								
0-15	186	25(16.0)	20(12.8ª)	-(0.0)	4(2.6)	-(0.0)	1(0.6)	-(0.0)
16-25	178	13(8.3)	11(7.1)	-(0.0)	-(0.0)	-(0.0)	-(0.0)	2(1.3)
26-40	194	12(7.7)	7(4.5)	4(2.6)	1(0.6)	-(0.0)	-(0.0)	-(0.0)
41-59	155	11(7.1)	7(4.5)	3(1.9)	1(0.6)	-(0.0)	-(0.0)	-(0.0)
>60	218	11(7.1)	3(1.9)	3(1.9)	-(0.0)	3(1.9)	2(1.9)	-(0.0)
Total	931	72(46.1)	48(30.8)	10(6.4)	6(3.8)	3(1.9)	3(1.9)	2(1.3)
Overall Total	1665	156	115(73.7)	16(10.3)	11(7.1)	9(5.8)	3(1.9)	2(1.3)

ª Values differ significantly from each other $p<0.05$

The clinical features of the dermatological lesions due to parasitic infections reveals that of the 115 patients with scabietic infection, 4(2.7%) males and 13(8.3%) females presented with generalized papular lesions; papular squamous scaly lesions were seen in 12 (7.7%) in both males and females while vesicular lesions were seen in 21(13.5%)males and 18(11.5%) in females, pustular lesions were seen in 19(12.2%) in males and 20(12.8%) in females.
of 6(3.8%) was recorded, occurring among subjects aged 0-15 years with

DISCUSSION

The pattern of parasite species manifesting dermatologic lesion in Benin City, Edo State is demonstrated in this study. Scabies was the most prevalent dermatologic parasitic infection with an overall prevalence of 73%, with a significantly higher prevalence among males compared to females ($P<0.05$). We are not able to explain this pattern of infection, we therefore suggest that this finding should be interpreted with caution. The highest infection was recorded among patients aged 0-15 years. Thus a possible interpretation of

this result is that children are most infected which corroborates other reported findings that children are more at risk of acquiring scabietic infection (13,14). This however varies from observation in Zaria, Nigeria from where age dependent pattern of infection were reported nôt to exist (15). It would seem that scabies being a contagious disease is most likely spread in children when at play, sleep and other interactions at home by direct contact. Our finding of increasing scabietic infection with decreasing age can therefore not be taken as an accepted general pattern of scabietic infection. This association is most likely a chance occurrence, especially when overcrowding is well documented as an important predisposing factor for scabietic infection (14,15). The variation in prevalence rates from various studies may be due to variations in study populations. On the other hand it could also be that the high prevalence recorded in childhood population may be an indication of slow acquisition of resistance in children. An earlier explanation for decreasing prevalence rate of scabies with advancing age may be the presence of acquired immunity to previous clinical and sub-clinical infectation(15)

Several prospective studies have shown that onchodermatitis and elephantiasis are manifestations of long standing filariasis (16,17,18) although these findings cannot be said to be conclusive. We however observed that filariasis due to *Onchocerca volvulus* and *Wuchereria bancrofti* were recorded among adults, middle aged and aged population. Our reported pattern thus provides support for these earlier findings that suggests chronicity of filarises. This concept is a strong indication that onchodermatitis and elephantiasis are mainfestation of long standing filariasis. The overall prevalence of onchodermatitis and elephantiasis was 10.3% and 5.8% respectively (Table2).

We reported 7.1% cases of myasis due to *Cordylobia anthropophaga* larvae with 5(3.2%) and 4(2.6%) form males and females respectively among children. In the childhood population children less than 5 years old were most infected which is consistent with earlier reports (5,17). As suggested earlier the high prevalence of myasis in children less than five years may be partly due to neglect and also partly due to behavioural pattern among children (19). Children have been reported to be left unchanged out of their soiled clothes for long hours while playing in the yards, often soiled in their urine and excrements. Most children in rural settings do not have access to proper toilet facilities and those in semi urban settings are not toilet trained. These therefore expose them to constant risks for infections, thus neglect of children and poor toilet habits have emerged as factors to consider in the epidemiology of myasis. The dirty environment thus created by poor standard of living and neglect serve as attractant for female *Cordylobia anthropophaga* flies, which lay eggs that hatch into the offending tissue invading larvae. Considering the consistency of demonstrated association in age and relationship to the prevalence of myasis, it is likely that behavioral habits and neglect of children contribute to the pattern of infection reported in children in this study.

1 (0.6%) case of cutaneous larva migrans was recorded in a female child aged less than 1 year and 2 (1.3%) case in 2 female aged over 60 years. Cutaneous larva migrans due to invasion by larvae of *Ancylostoma caninum* is a zoonosis, dogs stray and defecate around yards where children play partly naked and adults walk barefooted thus creating an enabling environment for the offending larvae to invade by the percutaneous route.

2 (1.3%) cases of Pediculus pubis were recorded in female aged between 16-25

years. One of these patients had been raped although we are not able to confirm if this infection was present before the rape, it is however worthy of note that one of the subjects had been sexually assaulted.

Both males and females were characterized by noteworthy multiple manifestation of dermatologic lesions in the same parasitoses. In this study we confirm a significantly higher occurrence of multiple lesions ($p<0.05$) and wider spread of lesions ($p<0.05$) in scabietic and onchocercal lesions compared to wuchereriasis, myasis, cutaneous larva migrans and pediculosis as previously documented (5,6,15,16). There were no sex dependent significant group differences in clinical manifestations of lesions. Our report of higher occurrence of multiple and wide spread lesions of scabies and onchodermatitis is consistent with earlier recorded findings (20). The non sex dependent significant differences in clinical manifestation may possibly be attributed to the fact there is no sex predilection in clinical manifestations of infections. The face was characteristically spared in scabies this provides support for an earlier report that scabietic lesions do not occur is skins above the neckline because the etiologic parasite avoids area with cold temperatures. (19).

A significantly higher scabietic prevalence of infection was observed among patients form the lower social class ($p<0.05$) which provides support for an earlier reported finding that factors like overcrowding and poor hygiene may promote parasitic dermatoses particularly scabies (14,15). Social class is therefore a factor of importance in the transmission and spread of infection.

We recommend that the best way to ensure cure rate in parasitic dermatoses is early recognition of lesions. Parasitologic confirmation of the offending parasite species may be needed before treatment is commenced. This will help to reduce the spread of lesions and associated morbidities. The effect of elephantiasis as observed was that infected people developed functional incapabilities that increased their dependence on family members with its associated economic impact, as sufferers became unproductive.

This work highlights the significance of studies of dermatologic manifestations of parasitic diseases. Information provided here will serve to facilitate case detection and improved quality care through enhanced clinical skills.

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