PREVALENCE OF ONCHOCERCIASIS IN UMUOWAIBU COMMUNITY OF IMO STATE, SOUTH EAST NIGERIA

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SUMMARY

Objectives: To determine the prevalence of onchocerciasis in individuals residing in the Umuowaibu community of Imo state in South East Nigeria and that of mixed filarial infections among persons with clinical signs of onchocerciasis.

Method: An onchocerciasis endemic community in Imo State, South East Nigeria was screened and persons showing overt clinical signs were selected for further study. Blood samples of selected persons were examined for microfilaria.

Results: Out of a total population of 750, 264 (35.2%) individuals had signs of clinical filariasis. The exhibited signs include pruritus in 46 persons (16.7%), skin nodules in 71 (27%), leopard skin in 30 (11.23%), skin tumour in 16 (6%), loss of vision in 72 (27.1%) and worms in the eye in 13 (4.5%). No individual exhibited microfilaria in the peripheral blood.

Conclusion: The occurrence of clinical signs and the presence of known insect vectors in the area were considered indicators of continuing active disease transmission despite community control measures. Absence of microfilaraemia in patients with overt onchocerciasis suggests the absence of mixed infections probably as a result of immunological, genetic, pathological, nutritional and other mechanisms.

Key Words: *Onchocerciasis, Endemicity, Microfilaraemia*

INTRODUCTION

Filariasis encompasses eight distinct species of parasites producing diseases in humans[1]. These are *Wuchereria bancrofti, Brugia malayi, Brugia timori, Onchocerca volvolus, Loa loa, Dipetalonema perstans, Mansonella perstans* and *Mansonella ozzardi.* Of these, *W. bancrofti, O. volvolus,* and *Loa* loa are the most important economically in the tropics.

About 200million people worldwide are infected with filariasis of which 90million (45%) are lymphatic filariasis, 30million (15%) are onchocerciasis and more than 2m (1%) are loiasis[2]. Adult filarial worms produce pre-larval forms, microfilaria, which inhabits the blood in lymphatic filariasis and loiasis; and the skin in onchocerciasis[3].

This study aims at determining the prevalence of clinical signs of onchocerciasis in Umuowaibu community of Imo State and among the people with clinical onchocerciasis, determine the prevalence of microfilaraemia.

MATERIALS AND METHODS

Umuowaibu community is a large agricultural settlement located within the Imo-River basin in the rain forest zone of South Eastern Nigeria. The ecological conditions are favourable for breeding of known insect vectors of parasitic diseases. Individual families live in homesteads situated along forest paths. The living houses are mostly mud-walled houses with raffia-palm thatched roofs. Few houses were with cement walls and metal corrugated roofs.

On mobilization, about 750 persons of different sexes, occupation and age came out for screening. Children below one year of age were excluded. All persons who came out were examined for clinical signs of filariasis such as leopard skin, subcutaneous nodules, hydrocoele, elephantiasis, worms in the eye, tumour, Calabar swelling, pruritus, urticaria, etc and those with clinical signs of onchocerciasis were selected for blood studies.

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Day and night blood samples were collected from the selected persons. The day samples were collected between 10.00am and 4.00pm while night samples were collected between 10.00pm and 12.00 midnight. Thick and thin blood smears were made as earlier described[4]. The slides were stained with giemsa and examined under the light microscope for microfilaria.

The Chi-square distribution was used for testing significance and probabilities of <0.05 were regarded as statistically significant.

RESULTS

Etymological studies around the streams and stagnant pools of water in the area revealed various species of known insect vectors of diseases such as *Simullium* damnosum (blackfly) and mosquitoes of the species *Mansonella perstans, Culex quinquefasciatus, Anopheles gambiae* and *Aedes aegypti.*

Of the 750 persons (600 or 80% females and 150 or 20% males) that presented for screening, 264 (35.2%) exhibited clinical signs of onchocerciasis. The sex specific population infection rates were 62.7% for males and 28.3% for females, a male/female infection ratio of about 2.2: 1. Of the infected persons, males made up 35.6% while female made up 64.4%.Table 1 presents the distribution of clinical signs of onchocerciasis among the affected members of the population. Visual loss and nodules are the most common signs. No individual had microfilaria in the peripheral blood.

Table 1: Distribution of Clinical Signs of Onchocerciasis among 264 residents of Umuowaibu

Clinical Sign	Male	Female	Total	%
Loss of Vision	24	48	72	27.2
Subcutaneous Nodules	26	45	71	26.9
Pruritus	18	28	46	17.4
Leopard Skin	11	19	30	11.4
Tumour	6	10	16	6.1
Oedema	5	11	16	6.1
Worms in the Eye	4	9	13	4.9
Total	94	170	264	100.0

DISCUSSION

Prevalence of clinical filariasis was high among the population, seemingly being proportionally higher in the males than in the females. This may be attributed to greater occupational exposure[5].

The absence of microfilaraemia may result from immunological, genetic, pathological and other control factors. These factors have been implicated in cases of absence or low rates of microfilaraemia in individuals. This may be the situation in the present study such that protective immune response may have been elicited in the host against the infecting microfilariae, killing them and leading to occult filariasis[6].

Since the persons examined had clinical signs of onchocerciasis and skin snips were not examined, it is also possible that microfilaria actually existed in their usual position, that is, the skin hence they were not identified in the blood. Similarly, a cross reaction of immune response to onchocerciasis may prevent the survival and establishment of the microfilariae of other filarial species precluding their being identified in the blood of persons with overt onchocerciasis. This suggests the absence of mixed infections of filariae worms in this community despite ecological factors supporting the transmission of these other diseases.

In elephantiasis, the change from the acute to the chronic condition is accompanied by a change from microfilaraemia to amicrofilaraemia due to immunological mechanisms[7]. Microfilaria densities may change from positive to negative in a matter of hours or days. Thus, individuals vary in the level of microfilaraemia they exhibit at different times of the year and the absence or low rates of microfilaraemia are attributable to phases of parasite killing[8].

Genetically, the savannah strain of *O. volvolus* is known to be more virulent than the forest strain and thus produces more microfilariae[9]. This study was done in the rain forest zone and blindness and visual loss is not expected to be very prevalent in this study population. The fact that visual loss seems high

here calls for more detailed study of the causes of visual loss in this community.

The ability of filarial worms to reproduce is compromised by lack of vitamin A and other essential vitamins[10]. The sample is a rural community subsisting mainly on carbohydrate staple food. It is possible that the level of micronutrient nutriture of the community may contribute to the lack of microfilaraemia.

One should not ignore the several onchocerciasis control attempts and programmes of the local councils and governments in the area[11]. This has involved the administration of filaricidal[12] drugs such as diethyl carbamazine and ivermectin. These may help explain the absence of microfilariae in the peripheral blood of members of this community.

CONCLUSION

The high prevalence of clinical signs of onchocerciasis combined with the presence of known vectors of the disease and suitable ecological conditions for their breeding in Umuowaibu community suggest the presence of active disease transmission and confirm that the community is still hyperendemic for onchocerciasis. The disease control measures should be intensified and more studies done to establish and tackle the causes of visual loss in the community.

The absence of microfilaraemia suggests absence of mixed infections probably as a result of immunological, genetic, pathological, nutritional and other control mechanisms. It may also be evidence of some measure of success of the disease control programmes.

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