Relationship between Onchocerciasis and *Plasmodium falciparum* malaria in Communities Endemic for Filariasis in South East Nigeria

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SUMMARY

Objective: To determine if there is a causal relationship between *Plasmodium falciparum* and clinical filariasis in individuals exposed to both infections.

Methods: An onchocerciasis endemic community in Imo State, South East Nigeria was screened and persons showing overt clinical signs of onchocerciasis were selected for further study. Blood samples of selected persons were examined for presence of different forms of *Plasmodium falciparum*.

Results: Of the 264 individuals [94 males (35%) and 170 females (65%)] 90 individuals (34.1%) had positive blood smears for *Plasmodium falciparum*. The association between the two parasitic infections although statistically significant does not seem to be causal.

Conclusion: Persons who are infected with onchocerciasis seem to also be at the risk of infection with *Plasmodium falciparum* malaria.

Key Words: *Onchocerciasis, Endemicity, Malaria*

INTRODUCTION

Malaria and filarial parasites existing simultaneously in the same host has been reported[1,2,3]. The association may be a result of concomitant infection of the human host by malaria and filarial parasites with the vector being either the same or different insect species. Such associations may be affected by factors of antagonism, interspecies competition and release of host factors which may be deleterious to growth and development of either parasite[4].

This study was conducted to determine if there is a causal association between *P. falciparum* and clinical filariasis in endemic populations.

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.

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 on opposite ends of a glass slide[5]. Positive identification of malaria parasite was done by detecting the presence of schizonts, trophozoites and or gametocytes.

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Test of association was with the Chi square distribution and a probability of < 0.05 was considered statistically significant.

RESULTS

The association of clinical filariasis and *Plasmodium falciparum* is shown in table 1. The table gives the frequency of occurrence of positive blood smear for *P. falciparum* in persons exhibiting different clinical signs of filariasis.

Table 1 Occurrence of *P. falciparum* in persons with clinical filariasis

Filariasis				***Plasmodium falciparum***		
Clinical Signs	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
Loss of Vision	24	48	72	6	18	24
Subcutaneous Nodules	26	45	71	5	20	25
Pruritus	18	28	46	7	7	14
Leopard Skin	11	19	30	4	6	10
Tumour	6	10	16	2	3	5
Oedema	5	11	16	3	3	6
Worms in the Eye	4	9	13	1	5	6
Total	94	170	264	28	62	90

Ninety persons (34.1%) out of the 264 individuals who had clinical signs of filariasis had positive blood smears for *P. falciparum*. There were no statistically significant differences between the sexes as 29.8% of the males and 23.5% of the females were smear positive.

DISCUSSION

A large proportion of persons who had clinical onchocerciasis were smear positive for *P. falciparum*. It therefore seems as if there is a relation between the two infections. It has been reported that people with such mixed infections may have greater morbidity and mortality, which may be as high as 50%[6]. It is, however, likely that filariasis does not result in greater severity of malaria parasitaemia and vice versa; an observation similar to studies on coexistence of malaria and bacteraemia[7]. In this instance the co-existence of filariasis and malaria may only be casual not causal, the only link being in the vectors sharing similar ecological factors.

CONCLUSION

Because the disease vectors share similar ecological factors, filariasis and malaria may coexist in the same individual. Control measures against filariasis should incorporate malaria control measures because of this likelihood of coexistence.

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