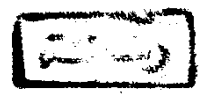
Ain Shams University
Faculty of Medicine
Dept. of Skin and Venereal Diseases

ONCHOCERCIASIS IN SUDAN
(JUR BLINDNESS)

THESIS

Submitted in Partial Fulfilment for
The Degree of Master in
Dermatology and Venereology



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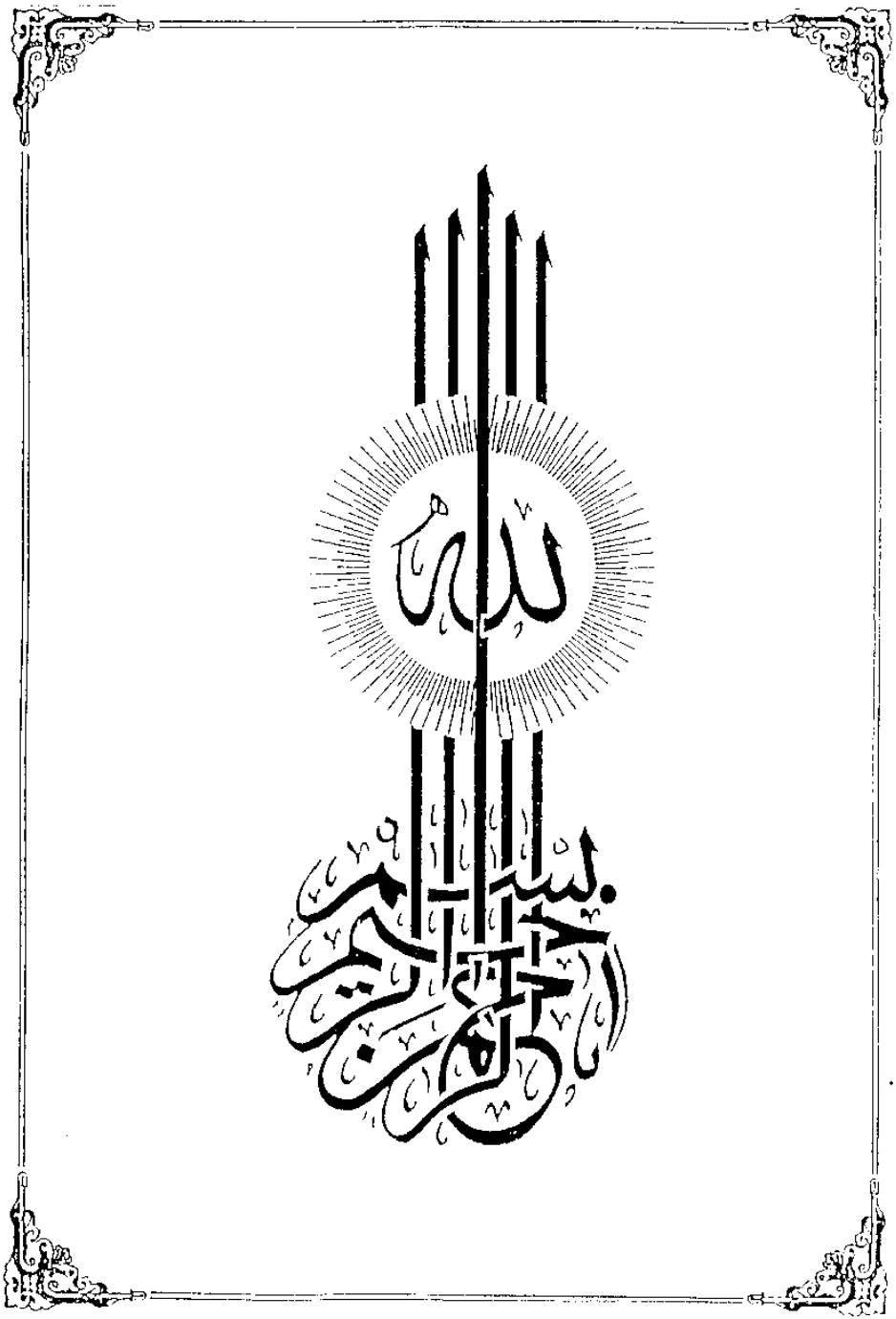

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Olivia Azmi Shenouda

TO

MY SONS

KARIM & RAMI

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INTRODUCTION

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Onchocerciasis, blinding filariasis or "River blindness" is a complex of dermal, nodular, ganglionic and ocular manifestations caused by the host reaction to the presence of *Onchocerca volvulus* introduced by the black flies of the Simulüdae family. It occurs throughout the greater part of tropical Africa, especially in the rain forest regions and the savannah belt that stretches for more than 4000 miles from the Atlantic coast of Senegal to the Indian Ocean in Tanzania. This is the primitive home of the disease, the great endemic area where more than 30 million people are infected. Other foci occur in the Yemen, Guatemala, Mexico, Venezuela and Colombia. (WHO, 1976).

Onchocerciasis ranks as one of the World's most formidable infectious disease yet the name is unfamiliar for most medical men. It is a disease of underdeveloped and underdoctored rural areas. Although Onchocerciasis is rarely mentioned in official morbidity statistics entire communities are afflicted with the unsightly and irritating onchocercal dermatitis, and blindness rates due to this infection often exceed 10 per cent.

It is more than 50 years since Blacklock (1926) discovered that *Onchocerca volvulus* is transmitted by *Simulium* flies, and although there have been some successful control projects, the greater part of the endemic region has been unaffected by the "advances" in knowledge. With the improvement of medical services in the rural areas many "new" foci of the disease are being discovered and onchocerciasis is now receiving more attention not only from the public health authorities but also from international bodies, particularly the World Health Organization. Throughout the World, however no more than a dozen scientists are devoted to the study and control of the disease.

It was as a cutaneous disease in Africa and as an ocular disease in America that onchocerciasis appeared until the remarkable work of a Belgian Ophthalmologist in 1931 who established once and for all that among onchocerciasis patients in Africa, if only they were looked for, ocular lesions identical with those observed in America, could be demonstrated. (WHO, 1966).

Thus through the combined work of various doctors, of various nationalities in various countries it has become possible to draw an accurate picture of onchocerciasis as a thread worm infestation with

cutaneous and ocular symptoms transmitted from man to man by the "black fly".

Onchocerciasis is an economically important disease, but not a killing disease. It incapacitates large sections of the community and makes them an economic burden. Control of the parasites and their vectors can do nothing but good; it will not increase the birth rate and produce more mouths to feed, but it will release whole communities from an intolerable burden of misery. Also, by ridding the countryside of biting simulüds, vast fertile areas will be freed for agricultural development. Total eradication is still remote but even with the application of existing knowledge and methods of control the intensity of transmission can be so restricted that many areas can be completely freed of this scourge.

HISTORICAL ASPECTS

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In 1875 Royal Naval Surgeon O'Neil identified, microfilaria *Onchocerca volvulus* as causing a chronic irritative skin eruption in West Africa.

In 1893 Leuckart discovered a long worm curled up in a cyst which has been sent to him from the Cold Coast by a German Missionary. He identified the worm which had a hook-shaped tail as a thread worm and named it *Onchocerca volvulus*. It was nothing more than a naturalist's curiosity.

In 1899 Blanchard demonstrated that *Onchocerca volvulus* lay in a lymphatic space in a tumour. The occurence of nodules in Africans was first reported by Prout in 1901 in Sieraleone.

These facts, although published, had no repercussions until 1913 when Ouzilleau in Ubangi noticed the great frequency of cutaneous lesions in persons with worm nodules. He attributed these lesions to filariasis. The theory led to numerous researches and controversies in the ex. Belgian, British and French territories until Montpellier and Lacrose in 1920 demonstrated thread worm embryos and microfilaria

in the dermis of persons suffering from cutaneous lesions. This discovery made in North Africa in persons from Negro Africa finally established the occurence of cutaneous disturbance in Onchocerciasis.

Meanwhile in 1918 Pacheco-Luna and Robles established in Guatemala the connection between the nodes or onchocercomata and the chronic blinding Kerato-iridocyclitis. Furthermore, they put forward the hypothesis that onchocerciasis was transmitted from man to man through the intermediary of small gnats, the black flies which were abundant in the coffee plantations where onchocerciasis and blindness were rife. They also saw the connection between the nodules and erysipelas of the coast (mal-morado) and rightly attributed this to a state of anaphylactic shock induced by the sudden death of millions of microfilariae- an aspect of the disease almost totally absent from the African variety. However, it was not until the slit-lamp became available, that Torroella (1931) saw the microfilariae in the aqueous humour. In 1932 this physical sign was confirmed by Hissette in the Belgian Congo.

Brumpt (1919) classified the worms as distinct species, *Onchocerca volvulus* and *Onchocerca caecutiens*, but