NEW TRENDS IN PARASITIC IMMUNIZATION

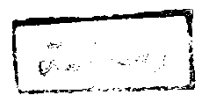
THESIS

Submitted for Partial Fulfillment
of Master Degree of Pediatrics

BY

Soheir Mohamed Ezzat
(M.B., B.Ch)

SUPERVISED BY



PROF. DR. GILANE ABD EL HAMID OSMAN

PROF. DR. MOHAMED FOUAD EL BADRAWI

FACULTY OF MEDICINE

AIN SHAMS UNIVERSITY

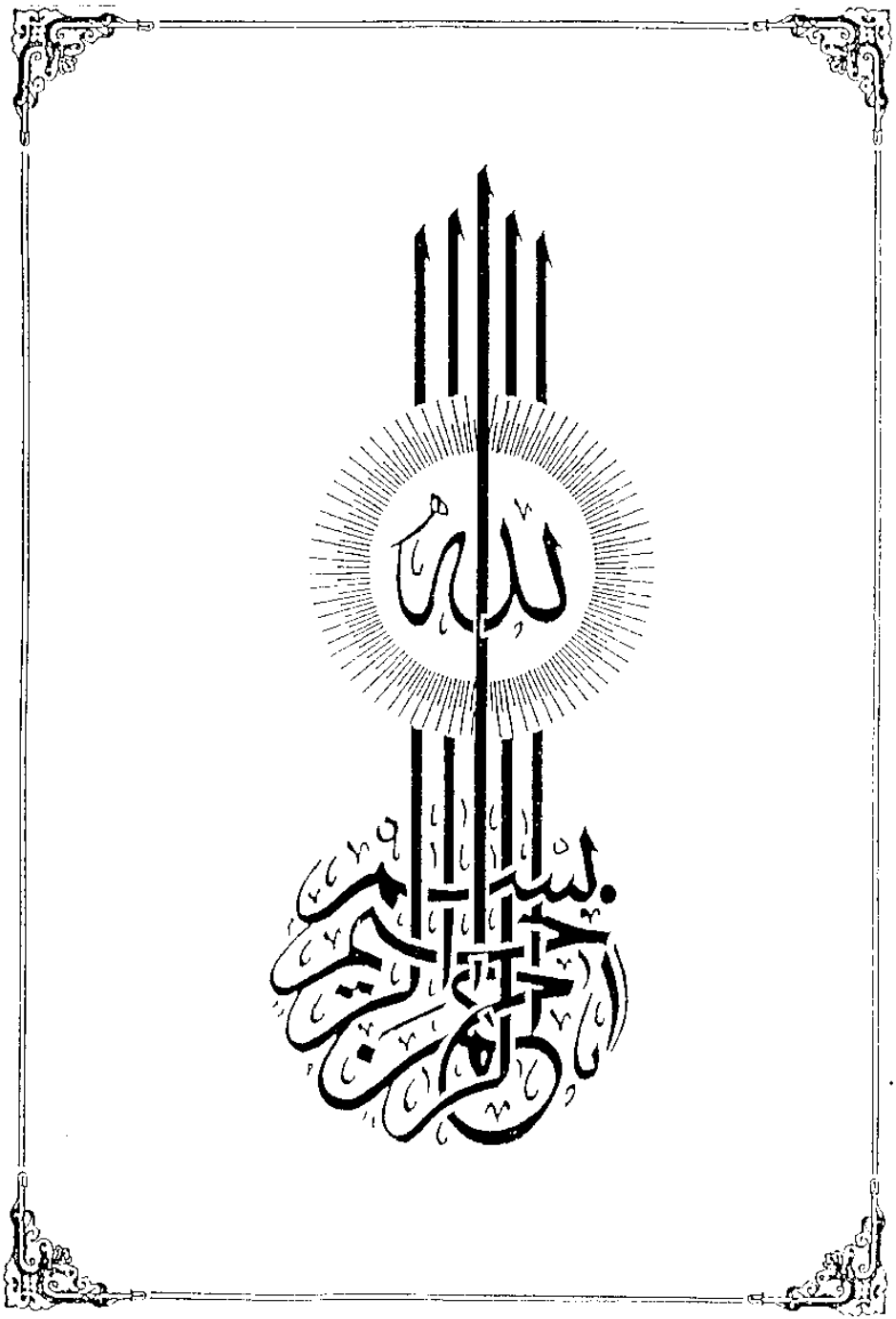
1985

بسم الله الرحمن الرحيم

" قالوا سبحانك لا علم لنا الا ما علمتنا
انك أنت العليم الحكيم "

صدق الله العظيم

سورة البقرة : آية ٣٢



ACKNOWLEDGEMENT

I wish to express my deep thanks to Professor Dr. Gilane Abd El Hamid Osman, Professor of Pediatrics, Faculty of Medicine, Ain Shams University for giving me the privilege of working under her surpervision.

I would like also to express my gratitude to Professor Dr. Mohamed Fouad El Badrawy, Professor of Pediatrics, Faculty of Medicine, Ain Shams University, for his fine and motive instructions, continuous follow up and unfailing guidance till this thesis was formulated.

Thanks also are extended to everyone, who participated in some way or other in helping this work become what it is.

TO MY MOTHER

CONTENTS

ABBREVIATIONS

DNA	Deoxyribonucleic acid
FAC	Freund's Complete Adjuvant.
FIC	Freund's Incomplete Adjuvant.
L. tropica	Leishmania tropica
mRNA	messenger Ribonucleic Acid.
P. falciparum	Plasmodium falciparum (Malaria, ovale & vivax).
S. haematobium	Schistosoma haematobium (mansoni).
T. gondii	Toxoplasma gondii.

Introduction & Aim of Work

INTRODUCTION

&

AIM OF THE WORK

Diseases caused by protozoa and helminths have received relatively little attension than those caused by bacteria, viruses and fungus. Such neglect of parasitic diseases contrasts with their global significance.

Schistosomiasis is today the most important human disease caused by animal parasite. It was estimated that there are 114 million people infected with schistosomiasis in the world. In lower Egypt for instance, an incidence of 60% infection was estimated, but more roughgoing diagnosis demonstrated 95% in some localities. (Chandler and Read, 1961).

Malaria is one of the most common infectious diseases of man, causing much morbidity and significant mortality. Inspite of intensive research, there is still no easy cure for both previous diseases and no easy means of control.

Toxoplasmosis is one of the hazardous diseases of neonates, which may lead to chorioretinitis,

cerebral calcification, hydrocephalus, microcephaly and convulsions. In Egypt an overall prevalence of toxoplasmosis was 16.8% as reported by Rifaat et al., (1975).

Cutaneous leishmaniasis is widely but focally distributed in the dry zones of tropics and subtropics. (Davey and Wilson, 1974).

The researchs in parasitic immunization are a new trend in preventive measures which may help irradication of parasitic infections.

The aim of this study is to throw the light on 4 of the famous parasitic infections mentioned before. It includes a brief knowledge about their morphology, life cycle, clinical picture and treatment with a special focus drawn on their immunization.

Review of Literature

SCHISTOSOMIASIS

Schistosomiasis is a chronic granulomatous disease caused by schistosoma worms.

THE PARASITE

In genus schistosoma, the adult worms are differentiated into males and females which are morphologicaly different. The male is about 8-16mm.long, has a cylindrical appearance, but actually flat, with the sides of the body posterior to the ventral sucker rolles ventrally to form a groove or "gynecophoric canal" in which the larger and more cylindrical female projecting freely at each end. Both male and female worms are provided with oral and ventral suckers.

Its cercariae have forked tails and also have oral and ventral suckers.(Chandler and Read,1961).

LIFE CYCLE:

Schistosoma infection is carried by water-born infective larvae (cercariae) released from the snail intermediate host (Biomphalaria alexandrina for S.Mansoni or Bulinus trancatus

for S.haematobium).

The cercaria can penetrate the host skin and wander in the subcutaneous tissue with the help of their digestive secretions and becomes a schistosomule for about 24 hours. (Faust and Meleny, 1924) Shistoosomules then penetrate subcutaneous venules travelling with the flow of blood and via the right side of the heart to lodge in the lung capillaries (Wheater and wilson, 1979).

They reach the left side of the heart through the mesenteric and hepatic arteries to the portal vein where they feed and grow rapidly.(Miller and Wilson, 1980).

Male and female worms proceed against incoming portal blood to their first habitate which are the mesenteric and portal veins for S.mansoni or vesicoprostatic (uterine) plexus of veins for S.haematobium where they copulate and ovipose in small terminal venules. (Chandler and Read, 1961). Cheever et al.,(1977) reported that passage of viable S.haematobium eggs in urine was proportional to the number of female worms

recovered from urogenital organs. Barlow and Meleny, (1949) reported that, after entrance of cercariae into the host, a period of 106 days is needed before ova appears in urine, and 145 days to appear in the stools.

CLINICAL MANIFESTATIONS AND PATHOGENESIS OF SCHISTOSOMIASIS:

1) INVASIVE PHASE:

A cercarial dermaitis "swimmer itch" may appear 24 hours after first infection but seldom lasts more than 48 hours.

2) ACUTE PHASE:

As for S. haematobium, there are usually no symptoms until 5 - 10 weeks after infection, when there may be mild allergic manifestations which occur more in Europeans in Africa, but are rare in indigenous Africans. As for S. japonicum, allergic manifestations such as pyrexia, pruritis and urticaria occur 3 - 8 weeks after infection and this is known as Katayama syndrome. It is accompanied with