EVALUATION OF SOME DIRECT AND INDIRECT METHODS IN DIAGNOSIS OF HEPATOSPLENIC SCHISTOSOMIASIS IN MENOUFIA GOVERNORATE

THESIS

IN PARTIAL FULFILLMENT

FOR THE DEGREE OF (MSc.)

IN PARASITOLOGY

BY

EL AMIR MAHMOUD AMIR

Demonstrator, Parasitology Department

Liver Institute - Menoufia University

SUPERVISORS

Pr.Dr.HAMED MAHMOUD KHALIL

Professor of Parasitology
Ain-Shams Faculty of medicine

Pr.Dr.MOHAMED HASSAN ABDEL-BAKI

Professor of Parasitology
Ain-Shams Faculty of medicine

Dr.MAZLOUM MAHMOUD AHMED

Ass.Professor of Parasitology
Ain-Shams Faculty of medicine

Dr.SALEH MAHMOUD SALEH

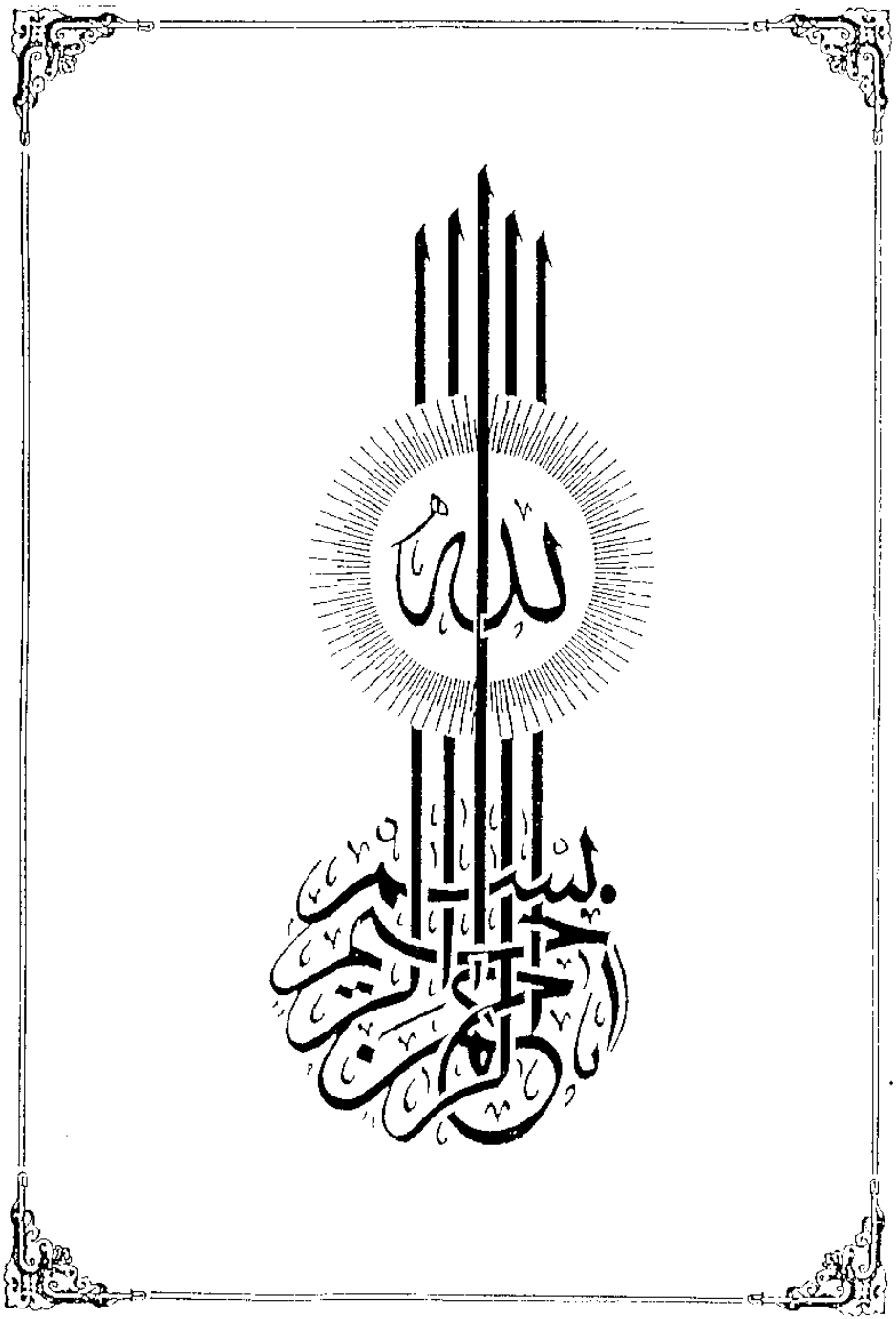
Ass.Professor of Int-medicine
Liver Institute, Menoufia Un.

Dr.MANAR MAHMOUD SAAD EL DIN

Lecturer of Parasitology
Ain-Shams Faculty of medicine

Parasitology Department
Ain-Shams Faculty of medicine

1993



TO MY FATHER AND MOTHER

ACKNOWLEDGEMENT

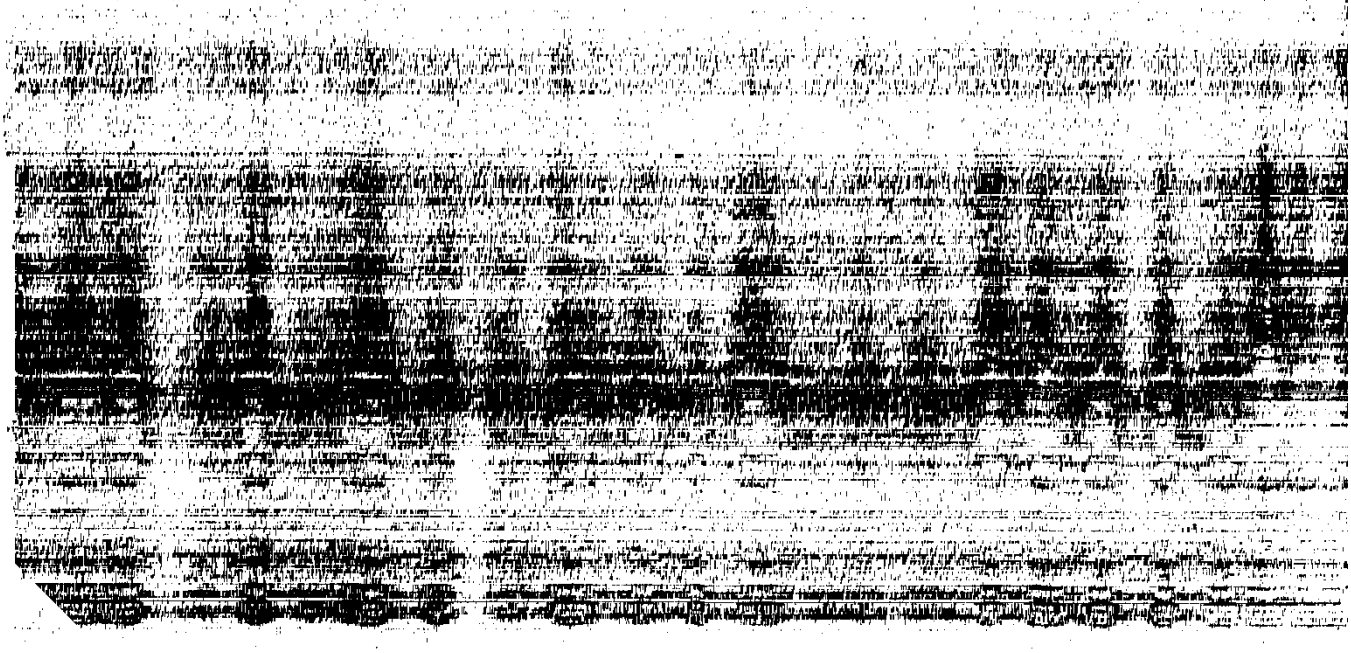
I would like to express my deepest gratitude, sincere appreciation to Professor Dr. Hamed Mahmoud Khalil professor of parasitology, Faculty of Medicine Ain-Shams University who kindely suggested the subject of this thesis and supporting me throughout the work with his valuable advice.

I owe a particular debt of gratitude to Professor Dr.Mohamed Hassan Abdel-Baki professor of parasitology, Faculty of Medicine Ain-Shams University for his unlimited valuable assistance, sincere advice, truthful cooperation, patient supervision of all the details of this work and the enormous effort he did to bring out this thesis in its present form .

I am gratful to Dr. Mazloum Mahmoud Ahmed, Assistant professor of parasitology, Ain-Shams Faculty of Medicine for his precious advice and continuous encouragement throughout the work .

CONTENTS

INTRODUCTION



INTRODUCTION

Human schistosomiasis or bilharziasis , as it is commonly known in many endemic areas , is an ancient water-borne disease recorded by the Egyptians 4000 years ago (Smithers and Doenhoff, 1982) .

It has been estimated that over 1000 million people in 73 countries of the world are exposed to schistosomiasis and that over 200 million are actually infected (Iarotski and Davis, 1981) . It is generally accepted that schistosomiasis is spreading because of increased snail habits created by water resource developments (World Health Organization, WHO, 1985) .

Schistosomiasis is headed the list of communicable diseases in Egypt both as regards its prevalence and reprecussion on the national economy of the country (Mousa, 1976) .

Schistosomiasis is today a world wide health problem throughout the developing world (El-Rooby, 1985) .

Schistosomiasis mansoni and haematobium are endemic in Egypt, and they constitute one of the major health problem of our country (Abdel-Wahab and Mahmoud, 1987) .

Schistosomiasis mansoni and viral hepatitis constitute the most common causes of chronic liver disease in Egypt (Yasin et al., 1991) .

Laboratory methods which demonstrate ova in excreta or biopsy material are generally more specific than serological assays of antischistosomal antigens or antibodies (Peters and Kazura , 1987) . However, as Kloetezel (1963), has pointed out the schistosomes are less fecund than most helminths, and the majority of eggs are retained in the tissues . The absence of

schistosome ova in excreta does not exclude the presence of live adult worms .

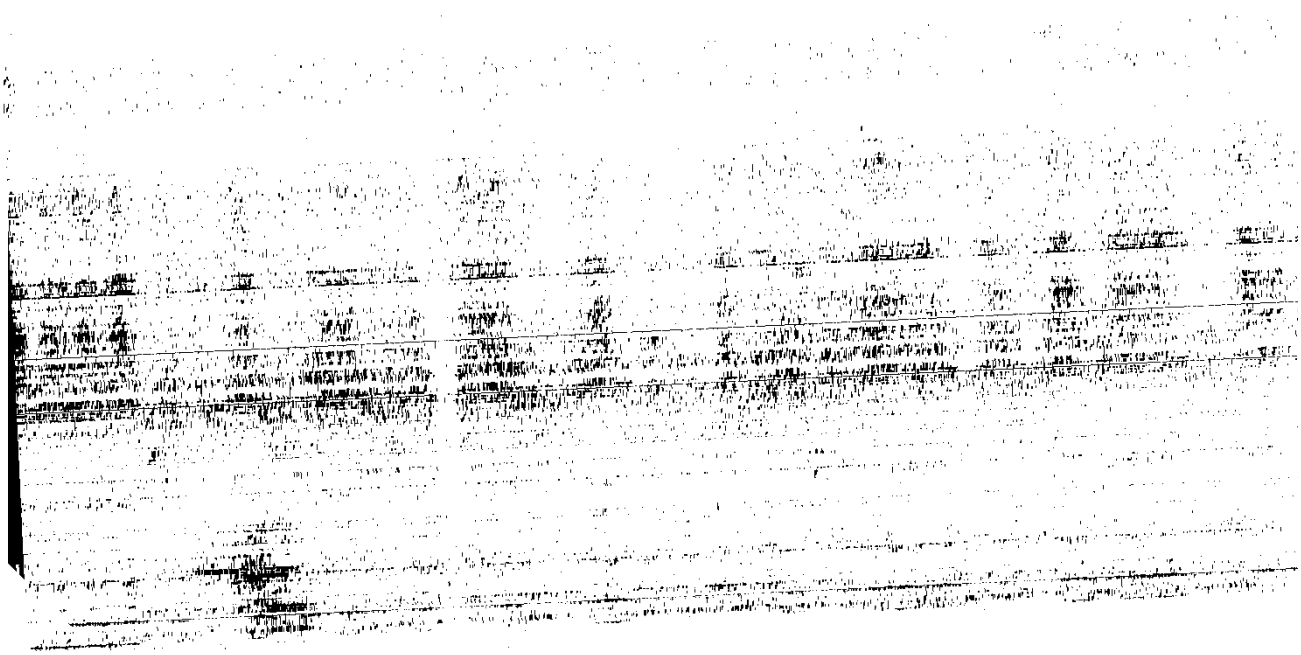
Jordan and Webbe (1982), stated that the immunodiagnosis is required for supporting diagnostic information in the analysis of individual cases of suspected infection .

Yassawy et al. (1989), revealed that endoscopic colonic biopsy is a better method than stool examination and serological tests in diagnosis of intestinal and hepatosplenic schistosomiasis .

As most of the cases coming to the hospital are of the chronic type, in whom the ova are scarcely detected in stools, and despite the many immunological tests currently employed, the demonstration of eggs in the urine and faeces remains the definitive method for the diagnosis of schistosomiasis (WHO, 1985) .

The present work was aimed at determining which of the more widely used direct methods would be suitable for diagnosis of the bilharzial nature of hepatosplenomegalic cases . Three techniques were compared : (1) modified Kato-thick smear technique ; (2) modified Ritchie concentration technique (MRCT) ; and (3)the rectal snip transparency technique . The direct techniques were evaluated and compared with the most widely serological test used in Menoufia governorate, indirect haemagglutination test (IHAT) .

REVIEW OF LITERATURE



REVIEW OF LITERATURE
HUMAN SCHISTOSOMIASIS

In its global importance, schistosomiasis is traditionally thought to rank second to malaria amongest the major parasitic diseases of man (WHO, 1967) . This evaluation is based on combined prevalence, morbidity and mortality estimates and perhaps more importantly, on the direct experience of physicians and public health officials who have witnessed and attempted to deal with the problem in endemic areas (Walsh and Warren, 1979).

Despite the advent of modern control schemes and the development of a highly effective drug (praziquantel) with minimal side-effects, the epidemiological status of schistosomiasis has not been officially lowered . Indeed, given the continued

expansion of irrigated agricultural projects in the tropics, increases in infection can be anticipated in certain areas (Butterworth, 1988) .

Schistosomes derive their name from the groove "schist" within which the adult male claps the cylindrical female to give the pair an elongated nematoid form suited to living in the blood vessels (Dawes, 1946 ; Faust and Russel, 1964 ; Sturrock, 1987).

Schistosomiasis is caused by digenetic trematodes or blood flukes of the genus Schistosoma belonging to the super family Schistosomatoidea . The three species of schistosomes commonly infecting man, Schistosoma haematobium, Schistosoma mansoni and Schistosoma japonicum have similar life-cycles and develop over a succession of stages-egg, miracidium, first-stage (mother) sporocyst, second-stage (daughter) sporocyst,

cercaria, schistosomulum and adult schistosome (Jordan and Webbe, 1982) .

Schistosomiasis is not directly communicable from human to human or from animals to humans . The prerequiste for acquiring infection is the exposure of humans to water harboring cercariae . Although some experimental laboratory animals are susceptible to the larval cercariae , animal reservoirs do not play a major role in maintaining the life cycle . A possible exception is Schistosoma japonicum, which is infective for water buffalo, dogs, rats and some other mammals (Maddison and Richards, 1988) .

In endemic areas in the tropics, snails become infected when infected humans contaminate water (cannals, lakes, streams) by defaecating and /or urinating into it . Humans begin to pass viable schistosome eggs within 6 to 8 weeks of exposure and