"STUDY OF SENSITIVITY AND SPECIFICITY OF A NEW INDIRECT HAEMAGGLUTINATION TEST KIT FOR BILHARZIASIS"

Thesis Submitted for Partial Fulfilment of
Master Degree in Clinical Pathology

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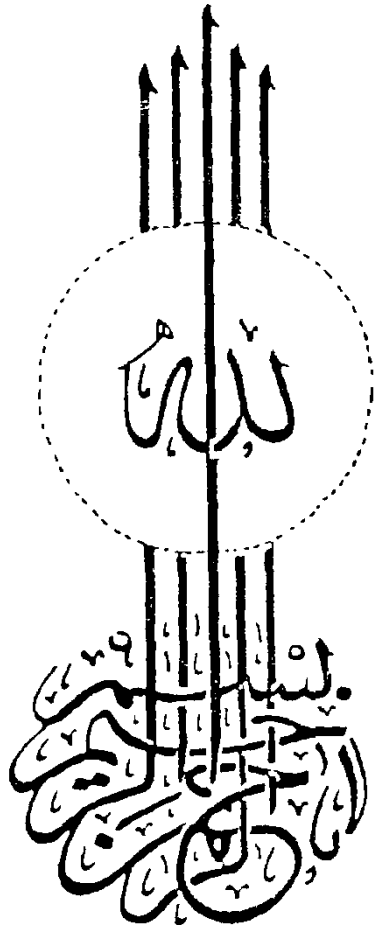

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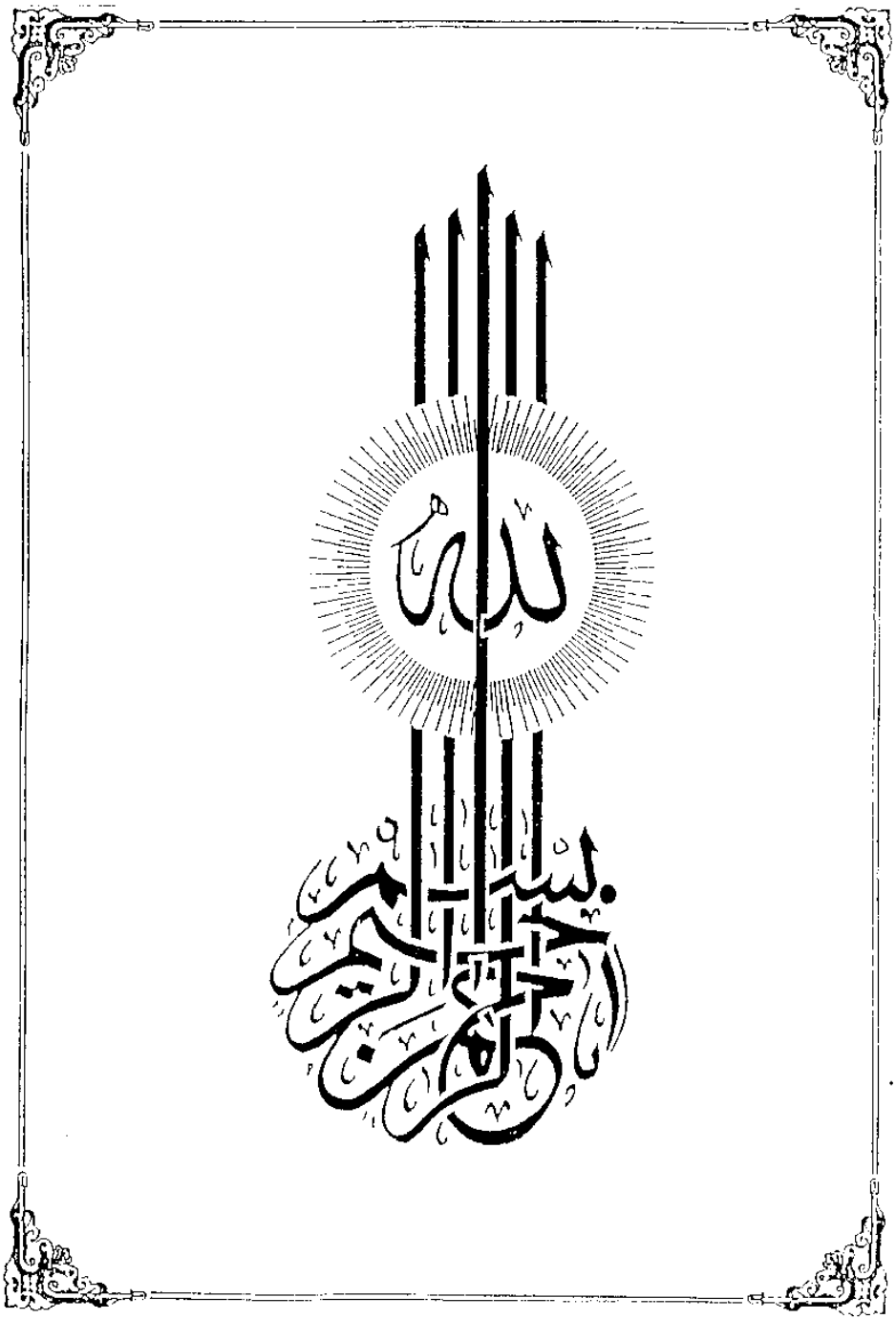

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ABBREVIATION LIST

CAA	Circulating anodal antigen
CCA	Circulating cathodal antigen
CFT	Complement fixation test
CHR	Cercarial hullen reaction
CIEP	Counterimmunoelectrophoresis
Con-A	Concanavalin-A
COPT	Circumoval precipitin test
DID	Double immunodiffusion
DIG ELISA	Diffusion in gel ELISA
DPR	Differential positive rate
(ECF) A	Eosinophilic chemotactic factor of anaphylaxis
ELISA	Enzyme linked immunosorbent assay
FAST-ELISA	Falcon assay screening test
FN	False negative
FP	False positive
IDT	Intradermal test
IEP	Immunoelectrophoresis
IFA	Indirect fluorescent antibody
IHA	Indirect haemagglutination
MAMA	Mansoni adult microsomal antigen
MSA	Major serological antigen
OPD	Orthophenylene diamine
RIA	Radioimmunoassay
ROC	Receiver operating characteristic curve
SEA	Soluble egg antigen
SH	Schistosoma haematobium
SM	Schistosoma mansoni
TN	True negative
TP	True positive
UPT	Urine precipitin test

LIST OF FIGURES

LIST OF FIGURES (CONT.)

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INTRODUCTION AND AIM OF WORK

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Schistosomiasis is an ancient water born disease recorded by Egyptians 4000 years ago. Today it is a world wide public health problem, estimated to afflict more than 200 million people in urban and periurban areas of the third world (Rady and Rady, 1987). It is at the top of the list of communicable diseases in Egypt both as regardsits prevalence and its repercussion on the national economy of our country.

The most widely accepted method for diagnosis of schistosomiasis is by direct examination of urine or stool for Schistosoma haematobium and Schistosoma mansoni eggs respectively. However, the techniques for urine and stool examination are both insensitive and labor intensive. Therefore serological tests are now being coupled with the direct examination. Serological tests are reliable especially with egg negative search, and being quantitative they allow monitoring of treatment.

A wide variety of serological tests have been described. These are the complement fixation test (CFT), indirect fluorescent antibody (IFA), enzyme linked immunosorbent assay (ELISA), radioimmunoassay (RIA)., indirect haemagglutination (IHA). and others.

Bilharziasis Fumouze, is relatively a new reagent for schistosomiasis serodiagnosis (by I.H.A.), using purified Schistosoma mansoni egg antigen. It has been claimed that it has an equal sensitivity comparable to that obtained by more laborious techniques such as ELISA. Therefore it has been felt that this kit requires an extensive evaluation study specially in Egypt, where the prevalence of schistosomiasis is very high and because the use of such a simple, rapid, inexpensive, sensitive, specific and quantitative test is extremely important for the control of this disease in our country.

AIM OF WORK:

Evaluation of "Bilharziasis "Fumouze"* indirect haemagglutination kit as regards its sensitivity, specificity and various performance characteristics. Also the diagnostic performance of the IHA using Bilharziasis Fumouze kit was correlated with ELISA technique previously done in our department.

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REVIEW OF LITERATURE

I - EPIDEMIOLOGY, LIFE CYCLE AND CLINICAL PICTURE

A. Epidemiology:

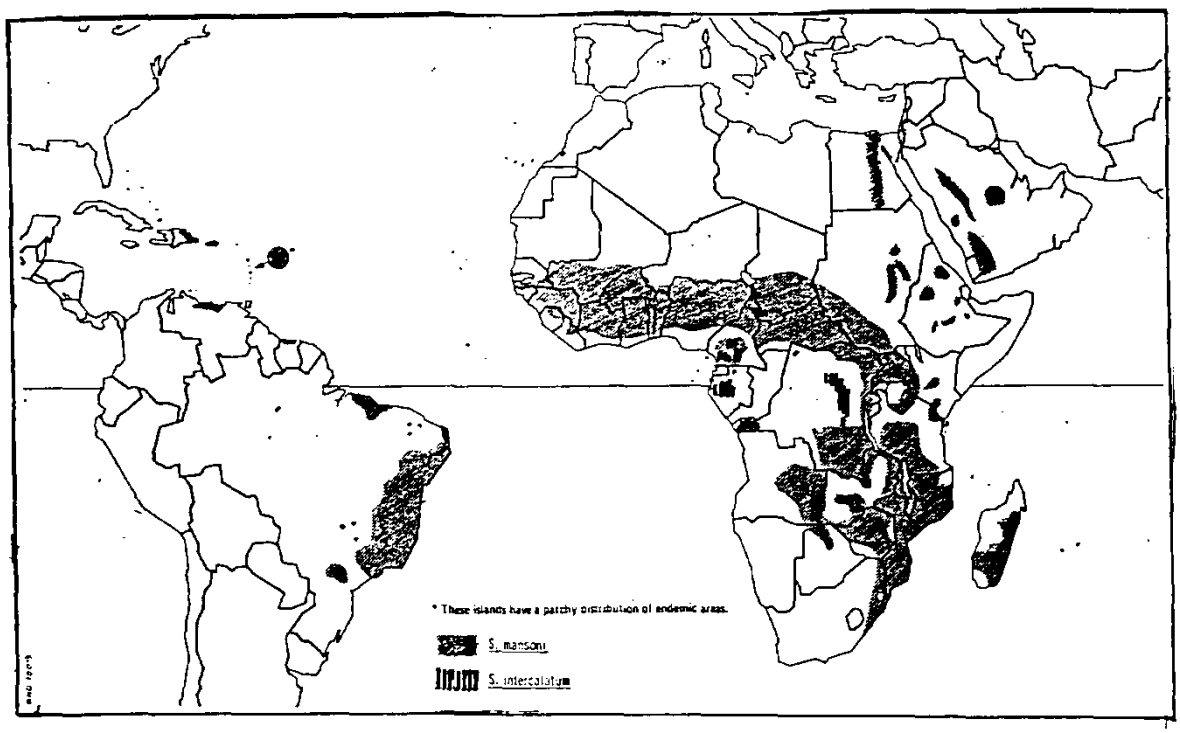
Schistosomiasis, a water born trematode infection, is one of the most wide spread parasitic diseases in the tropics and subtropics being endemic in over 70 countries (Bisseru, 1984). Schistosomiasis is an ancient harmful infestation and is one of the major health problems in those countries, with social and economic implications. Its eradication is a major WHO problem and greater priority should be given to its diagnosis and control. It was estimated that 200 million people suffer from schistosomiasis and that this number is increasing (WHO, 1980; Rady and Rady, 1987).

Schistosomiasis is usually attributed to the three species of schistosomes, subdivided into intestinal (Schistosoma mansoni and Schistosoma japonicum) and urinary (Schistosoma haematobium) types, according to the site preferred by the adult worm. However, other species that rarely affect man, producing bowel symptoms are Schistosoma intercalatum, Schistosoma mekongi and Schistosoma mattheei (commonly found in sheep) (Bisseru, 1984). Moreover, the preferred sites of involvement are relative rather than absolute, for example, eggs

of Schistosoma haematobium are commonly found in the rectal mucosa of an infected person, while in infection with Schistosoma mansoni, eggs are sporadically demonstrated in the urine (Weller, 1983).

Schistosoma haematobium is endemic in the Middle East, north and subsaharan Africa, Madagascar and some islands in the Indian Ocean. Schistosoma mansoni has a wider distribution being found in larger parts of Africa, and is endemic in many parts of Middle East, some areas of central and South America and some caribean islands. Schistosoma japonicum is confined to Far East, in Japan, China, Thailand and Philippines. Schistosoma intercalatum was first described in Zaire, but also has been found in other central African countries (Bisseru, 1984).

The pattern of distribution of schistosomiasis in Egypt was throughly studied. Scott, (1937) reported on the prevalence of Schistosoma haematobium and Schistosoma mansoni in Egyptian villages in upper and lower Egypt. At that time Schistosoma haematobium infections were common in the delta with prevalence ranging from 55% to 75%. However, the distribution of infection with Schistosoma mansoni in the Delta varied widely ranging from 60% north of delta to 6% in its southern part. Again in upper Egypt Schistosoma



Fig(1):

World distribution of human schistosomiasis
S.mansoni and S.intercalatum (Bisseru 1984)