

14129/4

PARASITIC INFESTATIONS OF C.N.S. IN PEDIATRICS

ESSAY

SUBMITTED FOR PARTIAL FULFILLMENT

OF THE (M.Sc.) DEGREE IN

(PEDIATRICS)

BY

AZZA IBRAHIM FOUAD MOHAMED ANOUS

M.B., B.Ch.

SUPERVISED BY

Prof. Dr. SAADIA MOHAMED ABD-EL-FATAH

Prof. of Pediatrics
Faculty of Medicine
Ain Shams University

Dr. SHEREEN ABD-EL-FATAH

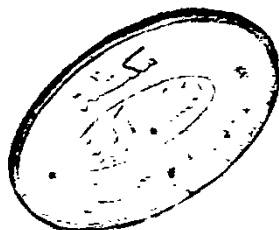
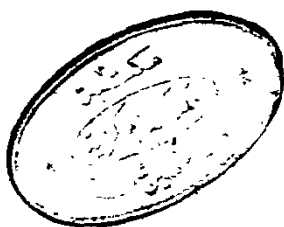
Lec. of Pediatrics
Faculty of Medicine
Ain Shams University

FACULTY OF MEDICINE
AIN SHAMS UNIVERSITY

1987

Signature of Azza Ibrahim Fouad Mohamed Anous
Signature of Prof. Dr. Saadia Mohamed Abd-El-Fatah

18-4296
A.9



26324

✓





ACKNOWLEDGMENT

I wish to express my profound gratitude and cordial appreciation to Professor Dr. SAADIA ABD EL-FATTAH, Prof. of Paed. Ain Shams University for the supervision & suggestions she offered, meticulous revision and encouragement throughout this work.

I wish also express my deep thanks to Dr. SHEREEN ABD EL-FATTAH Lecturer of Paed. Ain Shams University for her guidance, revision and support.



W

TABLE OF CONTENTS

(6)

TABLE OF CONTENTS

	<u>PAGE</u>
<u>Introduction</u>	
I- Helminthic infections	
- Schistosomiasis	1
- Schistosomiasis of Nervous System.....	7
-Hydatid cysts	25
- Toxocariasis	33
- Cysticercosis	37
- Trichinosis	48
- Strongyloidiasis	52
- Paragonimiasis	57
II- Protozoal infections	
- Toxoplasmosis	63
- Malaria	91
-Primary amebic Meningoencephalitis.....	126
- Trypanosomiasis	140
- Coenuriasis	150
- Loa loa infections	152
Summary	
References	
Arabic Summary	



INTRODUCTION

INTRODUCTION

Although there are disorders of the central nervous system occurring only in the children of particular parts of the world, most are common to all countries.

Diseases which occur sporadically in temperate countries, may however, in tropical and semitropical regions occur with much greater frequency and severity, largely because of associated factors such as malnutrition, over crowding, poor hygiene, lack of prophylactic immunizations.

Many patients with central nervous disorders are not brought for attention until they have disturbances of consciousness, stupor or coma and also convulsions. (Harter., 1984).

Various aetiological agents have been implicated with pathogenesis of central nervous system infections. These include: Bacterial, Viral, Fungal and Parasitic agents.

Human parasitic infestations are serious public health and economic problems in many parts of the world. These disorders in general go hand in hand with poverty and poor living conditions. (Bell, and McCormick, 1981).



Neurological syndromes caused by parasites are important for two reasons: Firstly they are not uncommon in many tropical countries and secondly they are often amenable to successful treatment. (Rée, 1986).

Parasitic infestations in central nervous system can be classified into two categories: those caused by Helminths and those caused by protozoa.

I- Helminthic infections :

- Schistosomiasis.
- Hydatid cysts.
- Toxocariasis.
- Cysticercosis.
- Trichinosis.
- **Strongyloidiasis**
- Paragonimiasis.

II- Protozoa :

- Toxoplasmosis.
- Cerebral malaria.
- Primary amebic meningoencephalitis, Naegleria infections, and Acanthamoeba infections.
- Trypanosomiasis.
- Coenuriasis.
- Microfilaria : Loa loa.



AIM OF ESSAY

Aim :

Aim of this essay is to throw light on the role of parasitic infestation of central nervous system diseases in paediatrics. It will include various aetiological agents, epidemiology, pathology, clinical picture, diagnosis and possible prophylactic and therapeutic measures.

Parasites were arranged in a descending order according to their prevalence and incidence in Egypt.



REVIEW OF LITERATURE



I HELMINTHIC

SCHISTOSOMIASIS

(BILHARZIASIS)

Three blood flukes, or trematodes, are responsible for this world wide complex of diseases: *Schistosoma mansoni*, the cause of intestinal Schistosomiasis, is wide spread in Egypt and is common locally in tropical Africa, Eastern south America and the Caribbean. Vesical or urinary schistosomiasis, caused by *Schistosoma hematobium* is common in Egypt and other parts of Africa and in parts of the Middle East. Asiatic intestinal schistosomiasis, due to *Schistosoma japonicum* infection, is important in China and the philippines and is now rare in Japan. (Goldsmith, 1986).

In Egypt; bilharziasis is an endemic disease, it is the most prevalent disease in rural areas, constituting the first public health problem.

The disease is commoner in lower Egypt, especially in the northern part of the Nile Delta where both species *Schistosoma haematobium*, *Schistosoma mansoni* exist, while in upper Egypt, *Schistosoma haematobium* infection predominates. (Mousa, 1975).

Bilharziasis is a disease more of childhood than of any other period of life, and in rural endemic areas,

infection occurs early in life; where is estimated 50-60% of rural community is infected with schistosoma.

In children the incidence increases to about 68% in the age group 8-10 years. (Abdel Salam, and Abdel Fattah, 1975).

Route of infection :

Various species of snails, the intermediate hosts, are infected by larvae hatched from eggs reaching fresh water in feces or urine. After development, infective larvae (Cercariae) leave the snails and penetrate human skin or mucous membranes that come in contact with water (Warren , 1982).

The life span of the worm is important, because of its theoretical implications for duration of control efforts (Hairston, 1963), life span as long as 30 years has been reported for schistosoma mansoni but generally accepted values for the mean life span are 5-10 years (Warren, et al., 1974) and (Webbe, 1982).

Pathogenesis and pathology :

Immature schistosoma mansoni organisms migrate to terminal branches of the inferior mesenteric veins in

the large bowel wall. Here the adults mature, mate, and deposit eggs. Many eggs reach the bowel lumen and passed in the feces; others lodge in the bowel wall and induce inflammation, fibrosis, ulceration, and granuloma or polyp formation. Eggs may be carried to the liver, where simillar changes occur, provoking periportal cirrhosis. Portal hypertension may follow, resulting in splenomegaly and ascites. Eggs may lodge ectopically in the lungs, spinal cord, or other tissues, giving rise to granuloma formation, fibrosis and localized symptoms.

Schistosoma japonicum adults lie in terminal branches of the superior and inferior mesenteric veins in the small and large bowel walls. Eggs are passed in the stool or lodge in the bowel wall, provoking changes similar to those noted above. Because greater number of eggs are produced by *Schistosoma japonicum*, the resulting disease is more extensive and severe. Eggs are frequently carried to the liver and occasionally to the central nervous system. Cirrhosis and portal hypertension are common.

Schistosoma japonicum infections of the brain occur in 2%-4 % of the Asians infected. (Reyes, et al., 1964).

Schistosoma hamatobium migrates to the venous plexus of the bladder and lower abdominal vessels producing urinary tract symptoms and complications, in addition to