

**EFFECT OF TREATMENT OF BILHARZIASIS ON
LIVER FUNCTIONS IN CASES OF BILHARZIASIS
WITH CHRONIC ACTIVE HEPATITIS**

THESIS

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LIST OF ABBREVIATION

ALT	Alanine transaminase enzyme
AST	Aspartate transaminase enzyme
CAH	Chronic active hepatitis
CPH	Chronic persistent hepatitis
HBV	Hepatitis B virus
NANB hepatitis	Non A non B hepatitis

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**INTRODUCTION AND
AIM OF THE WORK**

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**INTRODUCTION AND
AIM OF THE WORK**

Bilharziasis and chronic active hepatitis are two common diseases in Egypt. Both diseases are injurious to the liver. Bilharziasis may lead to chronic antigenemia. In Egypt, the prevalence of chronic HBsAg varies from urban (1.5%) to rural areas (5.7%). This difference was attributed to the fact that schistosomal infection is more frequent in rural than in urban population. It was assumed that schistosomal patients tend to retain HBsAg for long periods and this was attributed to the immunological status of the host (Nooman et al., 1974).

Infection with HBV in patients with hepatic bilharziasis may cause an additional injury to the liver. Schistosoma infected patients with chronic active hepatitis are usually at high risk for development of severe chronic liver disease. This superadded liver pathological affection will result, most probably, in worsening of the prognosis of a previously stable liver disease. Thus bilharzial treatment by non toxic drug may benefit these patients. The aim of this work is to study the effect of treatment of bilharziasis on the liver functions in cases of bilharziasis associated with chronic active hepatitis.

**REVIEW
OF
LITERATURE**

**CHAPTER I: DEFINITION AND AETIOLOGY OF
CHRONIC ACTIVE HEPATITIS**

CHRONIC ACTIVE HEPATITIS

Definition:

It is a chronic inflammatory and fibrosing liver lesion of varied aetiology and variable histological features. Histologically the condition varies from mild portal inflammation or patchy lobular necrosis of the hepatocytes to multilobular hepatic necrosis. Clinically the patient varies from being asymptomatic to experiencing incapacitating weakness or fatigue. Biochemically there is variation from minimal rise in SGPT to major alterations in all tests including severe prolongation of prothrombin time. The liver functions are altered for more than six months (Sidney Cohen et al., 1983).

Aetiology:

It is now apparent that chronic active hepatitis does not represent a single disease entity but is a pattern of liver injury due to multiple causes. It has been recorded to occur as a sequale of any of the following conditions:

1. Post virus B chronic active hepatitis.
2. Non A non B chronic active hepatitis.
3. Autoimmune chronic active "Lupoid" hepatitis with absence of any obvious aetiological factor.
4. Alcohol induced chronic active hepatitis.
5. In patients with Wilson's disease.
6. In patients with α_1 antitrypsin deficiency.
7. Following the use of some drugs.

8. Patients with polyarteritis nodosa, disseminated lupus erythematosus and Henoch-Schonlein purpura may have a liver biopsy changes of chronic active hepatitis.
9. In neonate and immunosuppressed individuals, Cytomegalovirus infection may lead to chronic active hepatitis. also rubella syndrome may lead to chronic active hepatitis.
10. Bilharziasis is a cause of chronic persistent hepatitis (**Schiff textbook 4th edition**).

1. Post virus B chronic active hepatitis

Worldwide, the hepatitis B virus is an important cause of acute hepatitis, chronic hepatitis, hepatic cirrhosis and primary hepatic cancer. It is carried chronically particularly in certain parts of the world notably the Far east and Africa (about 10-15% carrier rate among blood donor) (**Sherlock 7th edition**).

The hepatitis B virus is a Dane particle about 42 nm sphere composed of an external surface antigen sheath covering a core. It is a DNA virus. The core of the virus particle contain a DNA polymerase enzyme and the DNA has a molecular weight of $1.8 - 23 \times 10^6$.

The entire dane particle is needed for infectivity but the serological markers are related to the various components of the virus (**Sherlock 7th edition**).

Under the electron microscope three types of particles can be seen in hepatitis B serum. Small 20 nm spheres, tubules 20 nm in diameter and 100 nm long and the more complex 42 nm Dane particles (**Sherlock 7th edition**).

Hepatitis B surface antigen and antibody:

HBs Ag and anti HBs.

HBs Ag which was first called Australia antigen (because it was originally found in an Australian aborigine) is found on the surface of the virus. It is also found on the 22 nm spherical particles and the long tubular forms of particles.

It displays antigenic heterogeneity in addition to a common determinant "a". HBs Ag particles possess two types specific subdeterminants either d or y and either w or r. Thus the four major serotypes are:

HBs Ag/a d r, a y r, a d w, a y w.

Infection with one serotype may fail to confer immunity against a second infection with another subtype.

The presence of HBs Ag in the serum implies prior exposure and probable infection. Generally HBs Ag is detected about one month before the onset of the symptoms, once symptoms appear HBs antigenaemia last about 6 weeks (**Walter and Israel 5th edition**).

In other word HBs Ag particles can be detected in the serum about six weeks after infection and disappear 3 months after infection (**Sherlock 7th edition**).

Persistence of HBs antigenaemia suggest progression to chronic hepatitis or an asymptomatic carrier state. Clearance of HBsAg implies recovery.

Approximately 80% of patients will develop antibody to the surface antigen (anti HBs) after clearing of HBs Ag. This antibody production is usually delayed weeks to months after resolution of the clinical disease.

About 20% of patients never develop antibodies and assay insensitivity may be responsible for the 20% of patients who do not develop anti HBs.

The presence of anti HBs implies recovery from infection, non infectivity and probably protection from further HBV infection. Anti HBs will persist generally for 18 months and possibly indefinitely in some patients.

Patients who are chronic carrier or have chronic hepatitis will demonstrate high HBs Ag titres with an absence of anti HBs production (**Walter and Israel 5th edition**).

Pre-S-region:

The surface antigen coding region was identified by searching for the codons predicted by the known-N-terminal amino acids sequence of HBs Ag. The surface antigen reading frame is much larger than the coding sequences required to encode the 24500 daltons of mature HBs Ag. The extra coding information lies directly upstream

of the structural gene for surface antigen and is known as pre-surface (or pre-S) region. Within this pre-S region are several potential translation initiation codons, which could lead to the production of large polypeptides related to HBs Ag. One such polypeptide of 31000 daltons (termed p 31) has recently been detected in human serum and in cultured cells into which HBV-DNA has been experimentally introduced. This polypeptide is now known to be responsible for the observed ability of HBs Ag particles to bind polymers of human serum albumin (Howard et al., 1986).

Core antigen and antibody:

(HBc Ag & anti HBc)

HBcAg is found in the inner core of the Dane particle and is found in the nucleus of the infected hepatocytes. It is not found free in the serum. The host responds by producing antibodies to the core antigen.

Unlike the anti HBs, anti HBc appear during the surface antigenaemia period and low level may persist indefinitely.

The antibody response to HBc Ag (anti HBc) occurs about the time of the rise in the serum aminotransferases but it is seldom persist for more than one year. Thus its detection in high titre is evidence of a recent infection with hepatitis B virus.

The clinical values of anti HBc lies in its ability to detect potentially infectious cases of type B hepatitis during the serological gap period.

Anti HBc in the presence of anti HBs implies recovery (Walter and Israel 5th edition).

DNA polymerase E:

Hess et al (1982) through in vitro test found:

a) A complete hepatitis B virus contain a circular double stranded DNA with a single stranded regions and an endogenous DNA polymerase.

b) The HBV associated DNA polymerase closes the single stranded regions of the HBV - DNA in the presence of thiophosphate and detergent.

c) The DNA polymerase reaction can be inhibited by antiviral therapy.

d) It remains unclear whether the HBV associated DNA polymerase is a virus or a host coded enzymes and whether a virus or a host coded enzyme are involved in HBV-DNA synthesis in vivo, a point which limit the value of these in vitro tests in the treatment of HBs Ag positive chronic liver diseases.

The persistence of DNA polymerase for months or even years occur in chronic carrier state and implies continued active viral replications and infectivity (**Neimark and Roger, 1982**).

The most sensitive index of viral replication is the serum hepatitis B viral DNA, this can now be detected by molecular hybridization by the southern blot technique (**Sherlock 7th edition**).