GUIDED LIVER BIOPSY USING ULTRASONOGRAPHY OR LAPAROSCOPY VERSUS BLIND LIVER BIOPSY IN THE DIAGNOSIS OF LIVER DISEASES

T H E S I S

Submitted in Partial fulfillment
of the Master Degree
(Tropical Medicine)

BY

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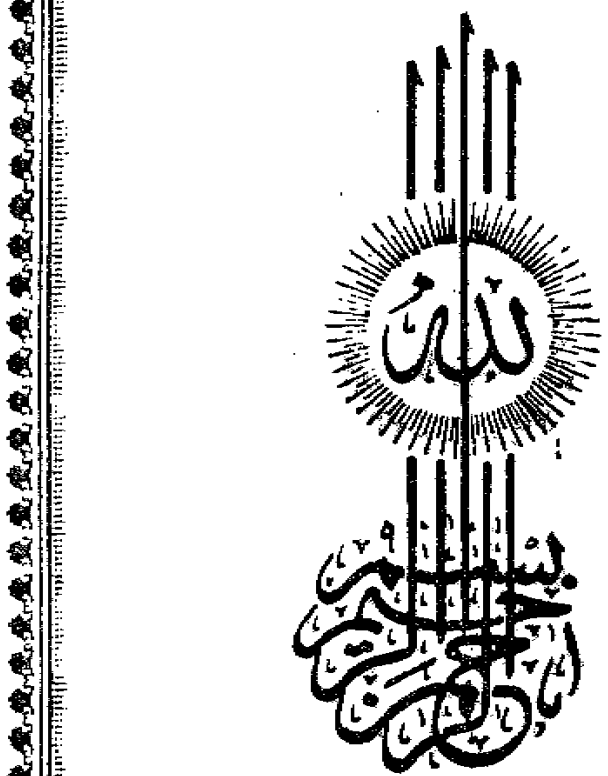
1985



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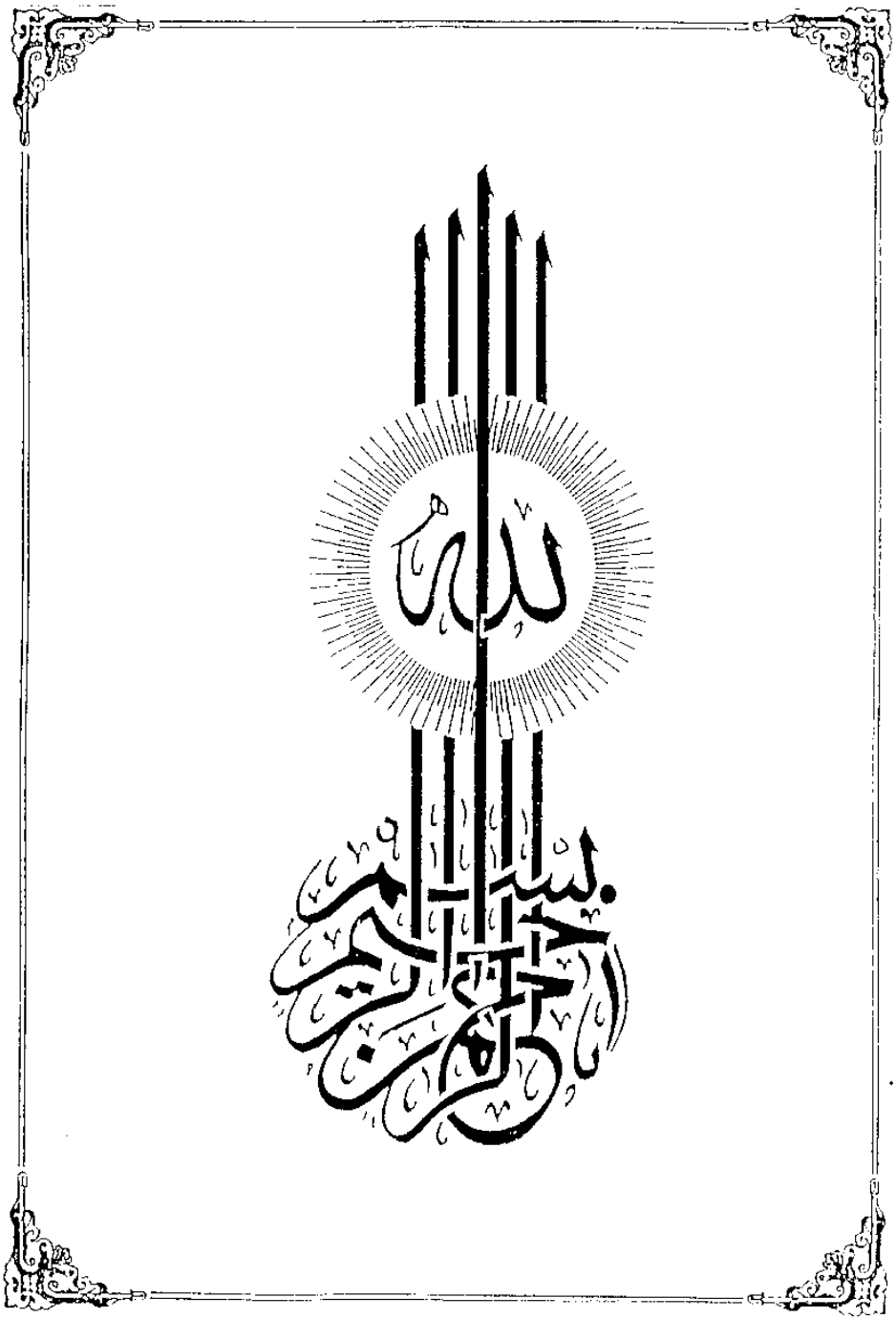

A C K N O W L E D G M E N T

(THANKS TO GOD)

I would like to thank Prof. Dr. SALAH SAIF-EL-DIN, Head of Tropical Medicine Department, Ain Shams University for his continuous encouragement, Support and ideas that paved the way throughout the work. This effort which I always honour.

I woul also like to thank Prof. Dr. MOHAMED ALI MADWAR Prof. of Tropical Medicine, Ain Shams University for his kind supervision particularly in the practical part of the work, in which he has spent a lot of his precious time

I would like also to express my gratitude and thanks, to Prof. Dr. MOHAMED FATHY ABDEL-WAHAB, Prof. of Tropical Medicine, Ain Shams University, for his guidance and kind help

Also I would like to thank Dr. FAWZI NAGUIB, Ass. Prof. of Pathology, Ain Shams University, for his kind help and advice.

Lastly, I would like to thank Dr. ZAKARIA MOHRAM for his guidance and help in references on ultrasonography, and to all the staff and my collegues in the department of Tropical Medicine for their utmost help and cooperation.

C O N T E N T S

INTRODUCTION

I N T R O D U C T I O N

The liver is one of the most important organs affected by tropical diseases. In Egypt, schistosomiasis heads the diseases that affect the liver, then viral hepatitis, chronic persistent and active hepatitis and other types of cirrhosis. Among the parasitic diseases; amoebiasis , malaria and hydatid disease are not infrequent. Hepatocellular carcinoma, reticuloses and secondary invasion of the liver are other causes of hepatic masses

In most of these conditions, the diagnosis can be made by the clinical picture, liver function tests and liver biopsy. In other hepatic lesions, the diagnosis might be difficult to t the extent that needle liver biopsy may be unhelpful, especially if the sample was taken from a healthy liver tissue.

Ultrasonography enables the consistency of hepatic lesions, whether cystic or solid to be evaluated. It may be useful in placing needle for liver biopsy or introduce instruments used to drain the biliary system or abscesses.

A combination of laparoscopy with needle liver biopsy enables the syrface of the liver to be visualized and the biopsy taken directly from any focal lesion (Sherlock, 1981)

Aim of the work:

The idea behind this work is to study the diagnostic value of guided liver biopsy using laparoscopy or ultrasonography as compared with blind needle liver biopsy in liver diseases.

Material and Methods :

Fifteen patients with chronic liver disease or hepatic swellings will be studied and subjected to the following procedures:

(1) Complete history and clinical examination.

(2) Urine and stools analysis .

(3) Sigmoidoscopy and rectal snip.

(4) Complete blood picture and E.S.R.

(5) Liver function tests including : serum bilirubin, plasma proteins, SGPT and alkaline phosphatase .

(6) HBs Ag. (7) Prothrombin time.

(8) Abdominal ultrasonography.

(9) Blind percutaneous needle liver biopsy and guided liver biopsy will be attempted in every case. Guided liver biopsy will be directed using ultrasound and/or laparoscopy.

REVIEW OF LITERATURE

LIVER BIOPSY

Liver biopsy :

Needle biopsy was first employed by Paul Erlich in 1883 to study the glycogen content of the diabetic liver. The technique did not achieve early popularity. Now, the elaboration of the technique, the clearer definition of indications and contraindications and the introduction of safer needles have resulted in needle biopsy being accepted in most large hospitals (Sherlock, 1981). The procedure is useful for determining the nature of the disease and monitoring its course. It should be done only by a trained physician on selected patients for definite indications (Chen and Chen, 1977)

Precautions should include:

(1) Exclusion of those with a tendency to bleed. A careful history, platelet count, and prothrombin time should be obtained.

(2) Exclusion of those with an allergic reaction to the anaesthetic agent.

(3) Postbiopsy care should include monitoring blood pressure and pulse, bed rest for 24 hours and pressure hemostasis achieved by lying on the side of the puncture wound for two hours.

(4) The services of a blood bank and surgical team should be available on short notice (Chen and Chen 1977).

Liver biopsy can be obtained by special needles, either by aspiration as in the Menghini needle or by puncture procedure as by the Vim-Silverman and Tru-Cut needles (Sherlock,1981).

Indications of liver biopsy:

1. Jaundice of non-hematological origin: the depth and duration of jaundice are not contraindications in themselves (Chen and Chen, 1977). However, the method carries extra-risk in this group (Sherlock, 1981).
2. Hepatomegaly: fatty liver, cirrhosis, and hepatic tumours are among the more frequent causes of liver enlargement (Chen and Chen , 1977).
3. Alcoholic liver injury: diagnosis of type and extent of involvement may be possible (Sherlock, 1981).
4. Congenital hepatic fibrosis (Sherlock, 1981).
5. Granulomatous disease: extention to the liver is often early and definite clue to the presence of the disease, as in sarcoidosis (Chen and Chen, 1977 and Sherlock, 1981).
6. Hepatic tumours
7. Infections: including tuberculosis, syphilis, histoplasmosis, pyogenic infection, amoebiasis. The appropriate stains for the causative organism should be applied and a portion of the biopsy cultured (Sherlock, 1981).
8. Storage diseases: including amyloidosis and glycogen disease (Sherlock, 1981).
9. Obscure splenomegaly, or abnormal liver function tests and in the elucidation of chronic sequelae of viral hepatitis (Sherlock, 1981).
10. Assessment of therapy as corticosteroids in chronic active hepatitis, venesection in haemochromatosis and anabolics for fatty liver (Chen and Chen, 1977 and Sherlock, 1981).

11. Fever of unkown origin and ascites of unkown aetiology are added as an indication for liver biopsy guided during peritoneoscopy (Bruguera, 1979).

Contraindications of liver biopsy:

i) Relative:

- infection in the right lung or pleural cavity.
- cardiac congestive liver.
- tense ascites.
- vascular tumours.
- amyloidosis of the liver, the procedure is said to be dangerous, but this has been over-emphasized (Sherlock, 1981).

ii) Absolute:

- prolonged prothrombin time, 4 seconds over the control is an arbitrary limit (Sherlock, 1981).
- severe blood dyscrasia, needle liver biopsy can be done safely if the platelet count is as low as 50,000 per cubic millimeter as these platelets are normally functioning.
- dilated biliary tree : needle liver biopsy is safe in patients with cholestatic jaundice however deep. After i.m.i. of vitamin K, the prothrombin time must not be prolonged more than 3 seconds over the control and the platelet count exeeds 80,000 (Sherlock, 1981).
- hydatid cyst, even when suspected, as intra-peritoneal rupture leads to secondary dissimination throughout the

- an uncooperative patient (Chen and Chen, 1977).

Risks and complications (Sherlock, 1981):

Even after careful avoidance of all the known contra-indications, needle liver biopsy has a certain number of risks and complications:

1) Pain in the site of puncture referred to the shoulder, is a common reaction. It is of short duration and usually does not require any treatment other than a simple analgesic. This may be due to pleuritis or perihepatitis, a friction rub may be heard on the next day and chest X-ray may show a small pneumothorax (Sherlock, 1981).
2) Bleeding into the peritoneal or pleural cavity, usually consists of a thin trickle lasting 10-60 seconds and the total blood loss is only 5-10 ml. Serious hemorrhage is usually intraperitoneal, resulting from either perforation of distended portal or hepatic veins or aberrant arteries, also a tear in the liver may follow deep breathing during the intercostal procedure. Tratment may or may not require transfusion and unless the hemorrhage stops, a laparotomy may become necessary.
3) Intra-hepatic hemorrhages: they are usually asymptomatic but can cause fever, rises in serum transaminases, a fall in haematocrit and if large, right upper quadrant tenderness and enlarging liver. However surgical drainage is rarely necessary.
4) Biliary complications: may result from accidental puncture of a distended biliary duct or the gall bladder. The resultant

biliary peritonitis may require surgical drainage.

5) Intra-hepatic arteriovenous fistula: this is rarely large to be clinically significant and may close spontaneously.

6) Haemobilia: is marked within three days by gastrointestinal bleeding, biliary colic and bilirubinuria.

7) Puncture of other viscera: as the colon or kidney, usually rare and not dangerous. Pancreatic puncture can be serious.

8) Bacteraemia can be detected in a significant percentage of patients, but clinical septicaemia is not apparent in a series of over 6000 consecutive biopsies in one institution (Bruguera, 1979).

9) Vasovagal reaction: owing to the puncture or to the extreme anxiety of an apprehensive patient.

10) Fracture of the biopsy needle: so before use, the needle should carefully be searched for defects.

Fatality rate:

Fatality rate vary from 0.17% in 20,000 biopsies with the Vim-Silverman needle to 0.15% in 80,000 biopsies with the Menghini needle. The risk of death from a liver biopsy is estimated as 1 in 6000 biopsies for the Menghini technique, and 1 in 1000 biopsies for the Vim-Silverman needle. The Menghini technique is somewhat safer due to the smaller-bore size of the needle (1.2mm bore width). The advantage of using the Vim-Silverman needle is that a larger specimen is obtained, which is useful for the diagnosis of extrahepatic cholestasis and primary biliary cirrhosis. More portal triads can be observed in a larger piece of liver. The chief cause of death in doing a liver biopsy is massive intra-peritoneal hemorrhage(Chen and Chen, 1977 and