Cardiovascular Affection in Chronic Liver Disease

Essay

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العلاقة بين أمراض الكبد المزمنة ومضاعفاتها على القلب والأوعية الدموية وتأثير كل منها على الأخر

رسالة

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The liver is the largest gland in the body, constitute about two per cent of the total body weight, located in the upper right portion of the abdominal cavity .

The various functions of the liver are carried out by the liver cells or hepatocytes .Currently, there is no artificial organ or device capable of emulating all the functions of the liver.

Chronic liver disease includes conditions such as primary biliary cirrhosis, primary sclerosing cholangitis, auto - immune liver disease, viral hepatitis, alcoholic liver disease and Wilson's disease.

The clinical picture of patients with cirrhosis is dominated by the classical complications to portal hypertension ,such as ascites, bleeding from esophageal varices, and encephalopathy .In addition, a considerable number of patients show signs of peripheral vasodilatation with palmar erythema and reddish skin, raised and bounding pulse, and a low systemic blood pressure indicating a hyperdynamic circulation.

In addition to the well characterized the hepato - renal syndrome, this has led to the introduction of new clinical entities such as cirrhotic cardiomyopathy and the hepato - pulmonary syndrome and porto - pulmonary hypertension.

CONTENTS

LIST OF ABBREVIATIONS

٣D	Three dimensional.
A O	Aorta.
A.P	Anterior papillary muscle.
ACE	Angiotensin converting enzymes.
AF	Atrial fibrillation.
AIH	Auto-immune hepatitis.
AIH-١	AIH type ١.
AIH-٢	AIH type ٢.
ALD	Alcoholic liver disease.
AlP	Alkaline phosphatase.
ALT	Alanine aminotransferase
AMA	Anti-mitochondrial antibodies.
ANA	Antinuclear antibodies.
Ant	Anterior segment of tricuspid valve.
Anti- LC١	Anti–liver cytosol ١.
AP-١	Activator protein-١.
AR	Autosomal recessive.
ARVC	Arrhythmogenic right ventricular cardiomyopathy.
ASMAs	Anti smooth muscle antibodies.
AST	Aspartate aminotransferase.
AV	Atrio-ventricular.
BNP	Brain natriuretic peptide.
B-NP	B-type natriuretic peptide.
CEE	Contrast enhanced echocardiography.
CHF	Congestive heart failure.
CNS	Central nervous system.
COPD	Chronic obstructive pulmonary disease.
CXR	Chest radiograph.
CYP	Cytochrome P٤٥٠.
CYP٢E١	Cytochrome p٢ E١.
DNA	Deoxyribonucleic acid.
ECG	Electrocardiogram.
EHMs	Extra hepatic manifestation.
ERK	Extracellular signal-regulated kinase.

FAS	Fetal alcohol syndrome.
GGT	Gamma glutamyl transferase.
GI	Gastro intestinal.
HBe Ag	Hepatitis B e antigen.
HBV	Hepatitis B virus.
HCC	Hepatocellular carcinoma.
HCV	Hepatitis C virus.
HLA	Human leukocyte antigen.
IAIHG	International Auto-immune Hepatitis Group.
ICD	Implantable cardiac defibrillator.
IDC	Idiopathic dilated cardiomyopathy
Ig	Immunoglobulins.
IGF-١	Insulin-like growth factor ١.
IgG	Immunoglobulin G.
IgM	Immunoglobulin M.
In	Innominate artery.
INR	International normalized ratio
IVC	Inferior vena cava.
JNK	C-jun N-terminal kinase.
L.C.C	Left common carotid artery.
L.S.	Left subclavian artery.
L.V.	Left ventricle.
LKM-١	Liver-kidney microsomal auto-antibodies.
LVEF	Left ventricular ejection fraction.
MAP	P٣٨ mitogen-activated protein.
MC	Mixed cryoglobulinaemia.
MCTD	Mixed connective tissue disease.
MDS	Myelodysplasia syndrome.
MHC	Major histocompatibility complex.
mm	Millimeters.
NAFLD	Non-alcoholic fatty liver disease.
NASH	Non-alcoholic steato-hepatitis.
NF	Natriuretic factor.
NF-B	Nuclear factor-B.
NYHA	New York Heart Association.
P.A	Pulmonary artery.
PASP	Pulmonary artery systolic pressure.

PBC	Primary biliary cirrhosis.
PCR	Polymerase chain reaction.
PDH-E٢	E٢-subunit of pyruvate dehydrogenase.
PSC	Primary sclerosing cholangitis.
PWD	P wave duration.
R.A	Right atrium.
R.V.	Right ventricle.
RAS	Renin –angiotensin system.
RES	Reticuloendothelial system.
RF	Rheumatoid factor.
ROS	Reactive oxygen species.
RT-PCR	Real time- polymerase chain reaction.
SL	Semi-lunar.
SLA/LP	Liver- pancreas antigen.
SLE	Systemic lupus erythematosus.
SVC	Superior vena cava.
Tc ٩٩	Technetium-٩٩m.
TGF B١	Transforming growth factor B١.
TIPS	Trans-jugular intra-hepatic porto-systemic shunt.
TNF	Tumor necrosing factor.
TNF-a	Tumor necrotizing factor.
U S	United states.
UGT	Glucuronosyl-transferases.
V.S.	Ventricular septum.
VA/Q	Ventilation/perfusion ratio.
WD	Wilson disease.
WHO	World Health Organization.

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INTRODUCTION:

The term "chronic liver disease" encompasses a large number of conditions having different etiologies and existing on a continuum between hepatitis infection and cirrhosis ***(Murphy, [illegible])***.

The commonest causes of chronic or end stage liver disease are alcohol and chronic viral hepatitis.

In addition there are a number of pathways to chronic liver disease including autoimmune conditions (e.g., autoimmune hepatitis, primary biliary cirrhosis and primary sclerosing cholangitis) and metabolic conditions (genetic hemochromatosis and Wilson's disease) ***(Kaplan, [illegible])***.

Hepatitis C virus infection is the most frequent cause of chronic liver disease and the most common indication for liver transplantation.

Alcohol and hepatitis C virus infection are synergistic in hastening the development of cirrhosis ***(Murphy, [illegible])***.

Alcoholic liver disease is one of the most serious complications of alcoholism. But other organs may also be affected by long term alcohol dependence or abuse ***(Keeffe,***).

The association of Alcoholic abuse and liver damage is known since the times of Ancient Greeks and is also recognized in Ayurveda ***(Mikko Salaspuro,***).

Alcoholic liver injury appears to progress from fatty changes through alcoholic hepatitis to cirrhosis ***(Lieber,***).

Worldwide hepatitis B is another cause of cirrhosis and hepatocellular carcinoma ***(Urbano-Márquez et al.,***).

Patients with alcoholic cirrhosis and end stage liver disease may have alcohol related heart disease (alcoholic cardiomyopathy). Heart disease associated with cirrhosis per se (cirrhotic cardiomyopathy) or coincidental heart disease (e.g., CAD) ***(Urbano-Márquez et al.,*** ***; Ma and Lee,*** ***; Corvey et al.,*** ***; Plotkin et al.,*** ***; Estruch et al.,***).

In addition, patients with cirrhosis develop complications from a variety of organs including the heart,

lungs, and kidneys, and other organ systems. Besides the hepatorenal syndrome, this has led to the introduction of new clinical entities, such as cirrhotic cardiomyopathy and the hepatopulmonary syndrome ***(Moller and Henriksen,*** [illegible]).

AIM OF THE WORK

Detection of relation between chronic liver disease and cardiovascular complication & effect of each on the other.

ANATOMY OF THE LIVER: (Figures ١, ٢, ٣, ٤)

The liver is the largest gland in the body, constitute about two per cent of the total body weight, located in the upper right portion of the abdominal cavity, beneath the diaphragm, and on top of the stomach, right kidney and intestines. Shaped like a cone, the liver is dark reddish-brown organ ***(van Leeuwen et al., ٢٠٠٦).***

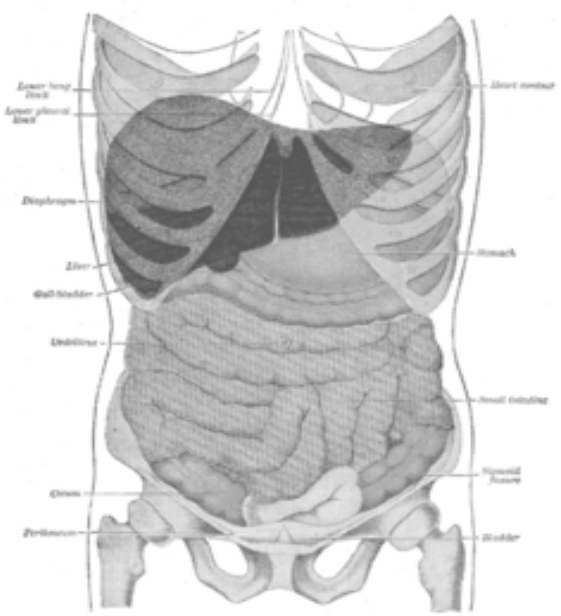

Figure (١): Diagram illustrating the liver inside the abdomen ***(van Leeuwen et al., ٢٠٠٦).***

The Couinaud classification of liver anatomy divides the liver into eight functionally independent segments. Each segment has its own vascular inflow, outflow and biliary drainage.