#### NURSING STUDIES

Year II.

## THE LIVER AND BILIARY TRACT

The <u>normal liver</u> is made up of lobules each of a similar structure and which surround a central vein. Columns of liver cells are arranged in a regular and radiate manner and extend to the periphery of the lobule. The channels between the columns of cells are called sinusoids and drain into the central hepatic vein. At the periphery of eachlobule are branches of the hepatic artery, portal vein and intrahepatic bile ducts. The bile ducts drain the intralobular bile canaliculi which lie between the liver cells.

# Pathological conditions of the liver.

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- 1) Traumatic, e.g. penetrating knife wounds, crash injuries.
- 2) Circulatory disorders, e.g. chronic passive venous congestion secondary to right heart failure (congestive cardiac failure)
  - Inflammations: (a) Viral hepatitis - infective heptatitis serum hepatitis
    - (b) Parasitic infections, e.g. amoebic hepatitis.
- 4) Cirrhosis of the liver: a diffuse fibrous scarring which affects the whole of the liver and which is associated with disorganisation of the lobular structure, areas of necrosis and areas of regeneration.

Cirrhosis implies (a) Liver cell failure (hepatic failure) (b) portal hypertension.

Common causes of cirrhosis : (i) Alcoholism. (ii) Biliary cirrhosis (prolonged obstructive jaundice).

5) Tumours : these are usually secondaries -

(i) Via the portal vein from the stomach or intestine.(ii) Via the systemic circulation - breast and bronchus.

## Pathological Condition of the Gall Bladder and Biliary Tract

- 1) Acute Cholecystitis: The gall bladder is infected by the various bacteria normally found in the large intestine,
- Chronic cholecystitis: A chronic inflammation of the gall bladder associated with gallstones.
- 3) Gall stones: the precipitation of crystals within the gall bladder which gradually form the concretions which become gallstones comprised of chelesterol, calcium bilirubinate and calcium carbonate.

The effects of gall stones:

- 1) may be symptomless.
- 2) may cause acute cholecystitis
- 3) may cause chronic cholecystitis
- 4) may obstruct the cystic duct leading to empyema of the gall bladder
- 5) migrate into the common bile duct leading to obstructive jaundice
- 6) migrate into the duodenum
- 7) precipitate acute pancreatitis.

# The Effects of Liver Failure

- 1) Jaundice: the liver cells fail to excrete normal amounts of bilirubin.
- 2) Low-grade fever.
- 3)
- 4) Coma, tremor, and mental changes.
- 5) Metabolic changes: decreased level of blood prothrombin causing a tendency to bleed.
- 6) Endocrine: change in distribution of body infertility, gynaecomastia in men, and testicular atrophy.

#### The Effects of Portal Hypertension

Obstruction of the portal venous system leads to:

- 1) Enlargement of the spleen.
- 2) Development of anastomotic channels; oesophageal varices.
- 3) Ascites: fluid is exuded into the abdominal cavity by the rise in hydrostatic pressure within the liwer combined with liver cell failure.

#### Jaundice

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The normal bile formation and circulation:

SPLEEN-	~ · · · · · · · · · · · · · · · · · · ·		_IVER
Hb.	BLOOD-STREAN_		
RETICULO-ENDATHENAL Systen	(pre-hepatic bilinubin)	C PULL	POST-HEPOTIL BILINUBIN
KIDNEY		STERCO-BIUNOJEN	DUDENUN STERCO- DILINOJEN
	SYSTEMIC CIRCULATION		LINATURINE
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		FAECES	/

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Types of Jaundice (a yellow discolouration of the skin and mucous membranes, due to an excess of circulating bilirubin):-

- 1) Haemolytic: the rate of bilirubin formation is greater than the rate at which it can be excreted by liver cells; this is due to the breakdown of haemoglobin in the spleen and thus an increase in prehepatic bilirubin, e.g. excessive breakdown of red cells in haemolytic anaemia.
- Hepatocellular: bilirubin production is normal but the liver cells are incapable of excreting all the pigment which is then reabsorbed into the bloodstream.
  e.g. cirrhosis of the liver, viral hepatitis.
- 3) Obstructive: bilirubin production is normal but the pigment excreted by the liver cells is prevented from reaching the intestine by obstruction of the biliary tract. This excess bilirubin can be excreted into the urine by the kidney. e.g. stones in the common bile duct, secondary carcinoma, carcinoma of the pancrease.
- 4) Drug Jaundice: A mild form of obstructive jaundice following the administration of chlorpromazine.

Symptoms and signs associated with liver disease:

- 1) Gynaecomastia: the development of breast tissue in men, due to an increase in circulating oestrogen.
- 2) Haematemesis: due to bleeding oesophagal varices.
- 3) Jaundice Investigations :
  - a) Estimations of the enzyme, alkaline phosphatase in the bloodstream will give an æsessment of the degree of hepatocellular damage.
  - b) Estimation of the bilirubin level, broken down into pre-hepatic and post-hepatic bilirubin, helps to determine whether jaundice is obstructive or hepatocellular.
  - c) Detection of bilirubin in the urine indicates obstructive jaundice.
  - d) Liver biopsy : a potentially dangerous procedure which can induce serious bleeding; blood must always be taken beforehand for blood grouping and cross-matching.

# 4) "Flapping" Tremor:

5) Biliary Colic: right hypochondrial spasms of severe pain which may radiate to the right shoulder-blade.

Investigations:

cholecystogram cholangiogram plain X-ray.

# Diseases of the Pancreas

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1)	Inflammations :	e.g. Acute Pancreatitis - a sudden diffuse enzymatic destruction of the pancreatic substance due to the escape of active, lytic pancreatic substances. Presents as an acute abdomen with severe pain, shock and circulatory collapse.
2)	Metabolic:	e.g. Diabetes Mellitus - a relative or absolute deficiency of insulin.
3)	Tumours:	e.g. Carcinoma of the Pancreas - 3-4% of deaths from malignant disease. Highly malignant with a very poor prognosis - 6 months from diagnosis.