Gall bladder 1st lecture

Objectives :

- Anatomy & function of gall bladder .
- Congenital anomalies .
- Investigations .
- Gall stones (Cholelithiasis) ; Types , Etiology , effects and complications .

The gall bladder and bile duct :

Anatomy:

-Pear shape , 7.5 – 12 cm in length .
- Capacity > 50 ml .
- Fundus , body , neck & infundibulum .
- cystic duct (2.5 cm , 0,5 cm) join common hepatic duct (2.5 cm) to form CBD. (7.5 cm)

Blood supply : cystic artery from Rt. Hepatic artery .
Caterpillar turn : Tortous Rt. Hepatic artery infront of origin of cystic duct with short cystic Ar.
Lymphatics : two ways ;
1- To cystic L.node of lund →coeliac L. N.
2- Directly to liver .

Physiology :

Bile →97% water
→2% bile salt
→1% bile acid and cholesterol.

Bile production : 40 ml / hour = 1000 ml /day .

Gall bladder function :

1- Reservoir & storage.
2- Concentration of bile 5-10 times .
3- secretion of mucin ; 20 ml / day .

Investigations of biliary tract :

1)Plain Xray :
-Radio opaque stone 10 – 20 %.
-Porcelain gall bladder .
-Limey bile .
-Gas in biliary tree.
2) Oral cholecystography & iv. Cholangiography.
-Out of use .
- Historical interest.
3) Ultrasonography :
-Prime test .
- Standard test .
- Quick , non-invassive test .
4) ERCP. & endoscopic ultrasonography .
5) MRCP .

6) Radio isotope scanning :

99mTC , HIDA , IODIDA . Iv. given , excreted in bile, gall bladder visualised 30 minute if delayed to 1 hour suggest acute cholangitis or contracted gall bladder (chronic) .

7) CT. Scan :

-To detect liver and pancreatic lesion .

- Cancer extent and staging .

- L. Node enlargement .

8) PTC .

9) Per operative cholangiography .

10) Per operative choledochoscopy :

Flexible fibreoptic endoscope to localize and extract stone .

Congenital abnormalities of GB. & bile ducts :

1- Abscence of G.B.

2- Phryngian cap 2 – 6 % , phrygian cap like hats of people of phrygia & asia minor.

Suptum in G. bladder either complete or incomplete .

3- Intra hepatic G.B.

4- Floating G.B. → torsion .

5- Double G.B. May be one of them .

6- Cystic duct anomalies : Intra hepatic ;

-Accessory duct .

- Low insertion .

- Short or absent.

Extra hepatic biliary Atresia :

-1/2000 live births .

- Occlusion of variable length .

- inflamation → destruction → fibrosis → oblitration .

Out come :

-Biliary cirrhosis .

- Portal hypertension .

- Jaundice .

- Liver failure

Types :

Type I occlusion of C.B.D.

Type II C.B.D. + C.H.D.

Type III C.B.D. + C.H.D. + Lt. & Rt. H.d.

Clinical features :

1- Jaundice at birth – progressive –

2- Pale muconium.

3- Dark urin .

4- Steatorrhoea.

5- Osteomalacia(biliary rickets).

6- Clubbing of fingers .

7- Portal hypertension .

8- Another anomalies in 20% .

DDx:

1- Neonatal jaundice .

2- Choledochal cyst .

3- Inspissated bile .

4- Neonatal hepatitis.

Rx : Early surgery Roux-en-Y or liver transplant.

Post op. Complications :

1- Cholengitis in 40% .

2- Portal hypertension 50% .

Choledochal cyst :

Def.: Congenital cystic dilatation of biliary tract.

Clinical features :

1- Jaundice .
2- Rt. hypochondrial cystic mass .
3- Cholengitis & pancreatitis .

Dx :

1- ultrasound diagnostic test .
2- MRI. & MRCP.
3- CT. scan .

Px : Premalignant → cholangiocarcinoma .

Rx : Surgical excesion & Roux-en-Y .

Gall stones (cholelithiasis) :

-The most common biliary disease .
- 10 – 15 % of adults in USA.
- 20 – 30 million .

Types : 3 main types ;
I : Cholestrol stone 6% .
II : Pigmanted stone (black , brown) .
III : Mixed stone 80% .

Aetiology :
1- Change in cholestrol / bile acid ratio .
2- Metabolic factors .
3- Infection .
4- Bile stasis .
5- F. Body .
6- Haemolysis .
7- Hormonal factors
8- Pregnancies – fertility .
9- Obesity .
10- High – calorie diet .

5 F : - **F**emale .
- **F**atty.
- **F**latulance.
- **F**ourty , fifty.
- **F**ertile.

Effects & complications of gall stones →clinical presentation :

1- Silent , asymptomatic .
2- Inflammation & infection → acute & chronic cholecystitis .
3- Obstruction : 1) jaundice 2) colick.
3) mucocele . 4) empyema.
4- Perforation & fistula .
5- Dyspepsia , flalulence & food intolerance .
6- Ca. gall bladder .

Another classification of effects & complications of stones :

I : Gall bladder : 1) Silent .
2) Cholecystitis.
3) gangrene.
4) perforation & fistula.
5) empyema.
6) mucocele .
7) Carcinoma.

II : Bile ducts : 1- Jaundice.
2- Cholengitis .
3- Pancreatitis .

III : Intestine : intestinal obstruction (gall stone ileus) .

Gall bladder 2nd lecture

Objectives :

- Cholecystitis ; acute & chronic ; Manifestations , DDx and management .
- Post cholecystectomy complications and syndrome .
- Bile ducts stones ; effects and complications .
- Tumors of gall bladder and biliary tree .

Cholecystitis :

1)Acute & 2) chronic

-Calculous 85 – 95 %

- Acalculous 5 – 15 %

Acute :

Inflammation of gall bladder wall .

M.O. :

1- E.coli .

2- klebsiella .

3- streptococcus faecalis .

4- bacteroid .

5- clostridia.

} uncommon & serious

6- typhoid .

Causes of acute cholecystitis :

1-Stone in 90% impacted in Hartmann's pouch or obstructing cystic duct .

2- Stasis .

3- Pancreatic juice reflux .

4 – CBD stone .
5- Bacteremia .
6 – Vascular effect of → D.M.
→ sickle
→ hypertension
→ collagen disease
cystic artery thrombosis → ischemia .

Clinical features of acute cholecystitis :

1- sudden onset .
2- 30 – 70 years & > 60 years 25% - 35% .
3- White caucasian > black people .
4- Heavy fatty meal .
5- Pain .
6- Nausea & vomitting .
7- Fever > 38° C .
8- Boas's sign .
9- Jaundice ?
10- Murphy sign .
11- Tenderness & rigidity .
12- Palpable tender mass .

DDx :

1- Appendicitis .
2- Perforated peptic ulcer .
3- Acute Rt. Pyelonephritis .
4- Liver abscess .
5- Rt. Lower lobar pneumonia.
6- Hepatitis .
7- Pancreatitis .
8- Herbes zoster .
9- **Myocardial infarction .**

The sequelae of attack :

1- Resolution ; disimpaction of the stone & drainage , slipping back of the stone.
2- Impacted stone persist → gangrene , mucocele , empyema .
3- Perforation .
4- Chronic .

Dx: 1- C X R & abdomen X ray .
2- ultrasound .
3- Radio iso top scan (HIDA) .
4- L.F.T.
5- WBC ___ leucocytosis .

Treatment :

A- Conservative Rx .

B- Cholecystoctomy .

A- Conservative :

90% of cases the symptoms subside.

1- N.G. tube & nile per mouth .

2- Antibiotics e.g.; cefazolin , cefunoxime , gentamicin .

3- Analgesia & antispasmatic .

B- Cholecystoctomy : → Early 2 – 3 – 5 days .

→ Delayed > 6 weeks .

-Laproscopic .

- Open .

N.B. : Convarsion rate in acute cholecystitis 5 times than in ellective (delayed) but still convesion not failure of laproscopic cholecystoctomy .

Chronic cholycystitis :

Thickened fibrotic wall of G.B. With stone(s) .

Symptoms :

1- Pain : episodes of Rt. hypochondrial pain of varying severity & interval (3 – 12 hours) after .

2- Flatulent dyspepsia , fullness , bleching , heartburn & distension .

3- nausea & vomiting .

Dx: As acute .

Rx: Cholecystoctomy .

Saint triad :

1- Gall stone(s) .

2- Diverticulosis .

3- Hiatus hernia .

It is important to find which one is the cause for dyspepsia .

Post cholecystoctomy complications :

1- Bleeding .
2- Jaundice .
3- Adjacent organs injury .
4- Biliary leak → fistula ; due to : a) Slipe ligature
b) Accessory duct .
c) CBD. Injury or ischemia .
d) Mirizzi syndrome .
5- Post cholecystoctomy syndrome .

Indications of cholecystoctomy :

1- Symptomatic gall stones .
2- Asymptomatic gall stone as prophylactic cholecystoctomy (controvarsial) .
a) Malignancy in 0.3 – 3% .
b) Diabetic patient .
c) Sickle & thalacaemia .
d) Morbid obesity (before undergoing bariatric surgery) .
3- Ca. gall bladder .

Post cholecystoctomy syndrome :

15% of cholecystoctomy fail to relieve the symptoms .

Causes :

1- Saint`s triad .
2- Pancreatitis .
3- D.U.
4- C.B.D. stone .
5- Long cystic duct stump .
6- C.B.D. Stricture .
7- Fibrosis of sphinector of oddi .

Indications of choledochotomy at cholecystectomy :

1- Stone in CBD.
2- Jaundice now or history .
3- Dilated CBD. > 10 mm.
4- ↑ alkaline phosphatase .
5- Wide cystic ducts & multiple small gall stones .

Stones in bile ducts :

Primary or secondary to gall stone.

Consequences : → obstructive jaundice .
→ cholangitis .

Symptoms :

1- Jaundice ; either intermittent or persistant .
2- Coliky pain .
3- Fever & rigors .

Complications of bile ducts stones :

1- Cholangitits .
2- Pancreatitis .
3- Biliary cirrhosis .

Dx : - L.F.T.
- US.
- ERCP.
- PTC.

Treatment :

1- ERCP & sphineterotomy .
2- Choledochotomy :
A- Supraduodenal choledochotomy stone removad and then T.tube or choledocho-duodenostomy .
B- Trans duodenal sphineterotomy & stone extraction .

Carcinoma of gall bladder :

-Very rare .
- 90% with gall stone .
- female/male is 5/1 .

Aetiology :

1- Stone 0.3 – 3% .
2- Age 70(s) .
3- Porcelain gall bladder .

Pathology ; **Types :**

-Scirrhous carcinoma .
- Squamous carcinoma .
- Adenocarcinoma .

Spread : 1) Direct invasion of the liver .
2) Lymphatic → Hilar L.nodes → Celiac L.N.
3) Distant __ uncommon .

Clinical features :

1- Accidentally dicovered at cholecystay in 1% .
2- May present with cholecystitis like manifestation .
3- Palpable mass .
4- Jaundice .

Treatment :

Cholecystoctomy + excision of gall bladder liver bed + Hialar Lymph adenoctomy .

Px :

-Poor.

- 90% will die in one year .
- 2 – 5% is 5 year survival .