MNT OF LIVER DISEASE

Assistant professor Mayasah A. Sadiq FIBMS-FM

- Liver
  - Most metabolically active organ in the body
    - Produces most of the proteins circulating in plasma
    - Produces bile to emulsify fat during digestion
    - Detoxifies drugs and alcohol
    - Processes excess nitrogen for excretion as urea

Common diseases of the liver

- Hepatitis: liver inflammation
  - Causes
    - Specific viral infections (A, B, C, D, and E)
    - Excessive alcohol intake
    - Exposure to drugs or toxic chemicals
    - Fatty liver disease
    - Autoimmune disease
    - Certain herbal remedies

Prevalence of viral hepatitis in Iraq

- According to WHO, Iraq is hyperendemic for hepatitis A (96.4%) and the number of people infected with hepatitis A has increased.
- Hepatitis B is endemic to Iraq, with a reported prevalence ranging from approximately 1% in the northern region to 3.5% in the southern region.
- Prevalence of hepatitis C is 0.2%.

Viral hepatitis

- Hepatitis A virus (HAV)
  - Primarily spread via fecal-oral transmission
- Hepatitis B virus (HBV)
  - Transmission: infected blood or needles, sexual contact with an infected person, or mother to infant during childbirth

- Viral hepatitis
  - Hepatitis C virus (HCV)
    - Spread via infected blood or needles
    - Not readily spread by sexual contact or childbirth
- Symptoms and signs of hepatitis
  - Onset of acute hepatitis
    - Fatigue, malaise, nausea, vomiting, anorexia, and pain in the liver area

- Symptoms and signs of hepatitis
  - Slightly enlarged, tender liver
  - Jaundice
  - Elevated ALT and AST serum levels
- Treatment of hepatitis
  - Supportive care: bed rest and diet

Nutrition therapy of hepatitis

- Most individuals: no dietary changes required
- Nutritional support as needed
  - Small, frequent meals (for anorexia, abdominal discomfort)
  - Electrolyte replacement (persistent vomiting)
  - Adequate protein (1.5-2 g/kg/day) and energy to replenish nutrient stores (malnourished)
  - Oral supplements

Cirrhosis

- Late stage of chronic liver disease
  - Extensive scarring replaces healthy liver tissue
  - Impaired liver function and liver failure
- What are
  the Unite

- Consequences of cirrhosis
  - Metabolic disturbances
    - Anemia; bruise easily; susceptible to infections
  - Bile obstruction
    - Jaundice, fat malabsorption, and pruritis (itchy skin)
  - Fluid accumulation in blood vessels and body tissues

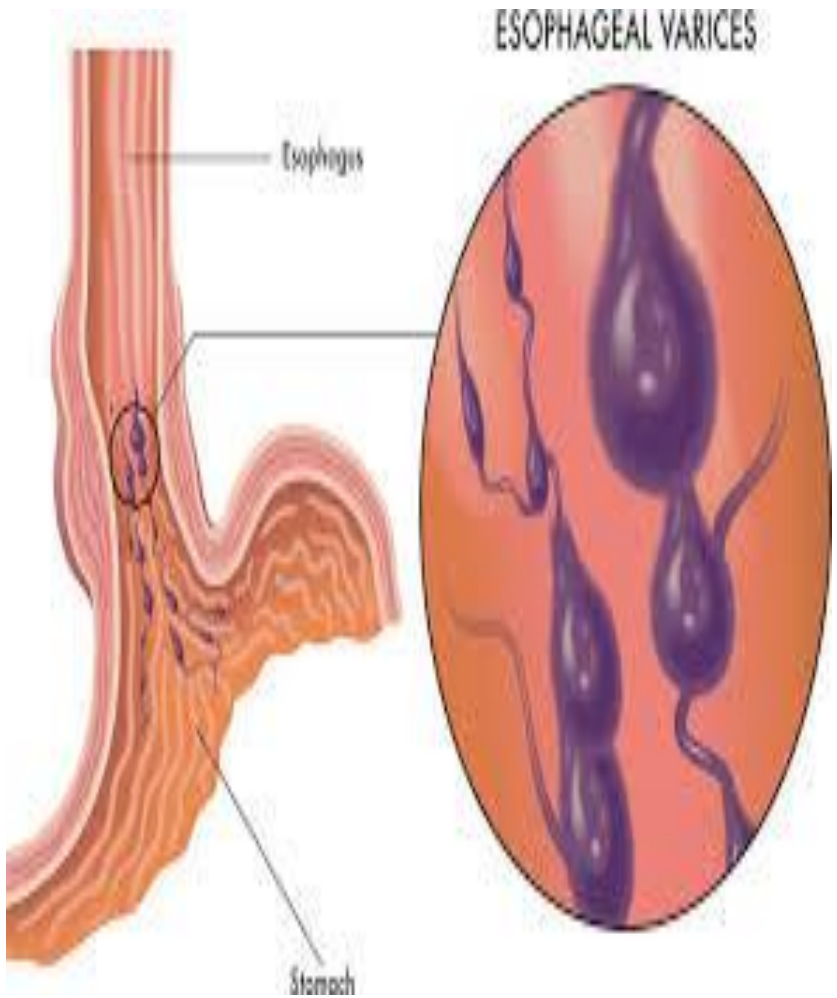
Laboratory Test	Normal Ranges (serum)	Values in Liver Disease
Alanine aminotransferase (ALT)	Male: 10–40 U/L Female: 7–35 U/L	Increased
Albumin	3.4–4.8 g/dL	Decreased
Alkaline phosphatase	25–100 U/L	Normal or increased
Ammonia	15–45 µg N/dL	Increased
Aspartate aminotransferase (AST)	10–30 U/L	Increased
Bilirubin (total)	0.3–1.2 mg/dL	Increased
Blood urea nitrogen (BUN)	6–20 mg/dL	Normal or decreased
Gamma-glutamyl transpeptidase (GGT)	Male: 2–30 U/L Female: 1–24 U/L	Increased
Prothrombin time[a]	11–15 seconds	Prolonged

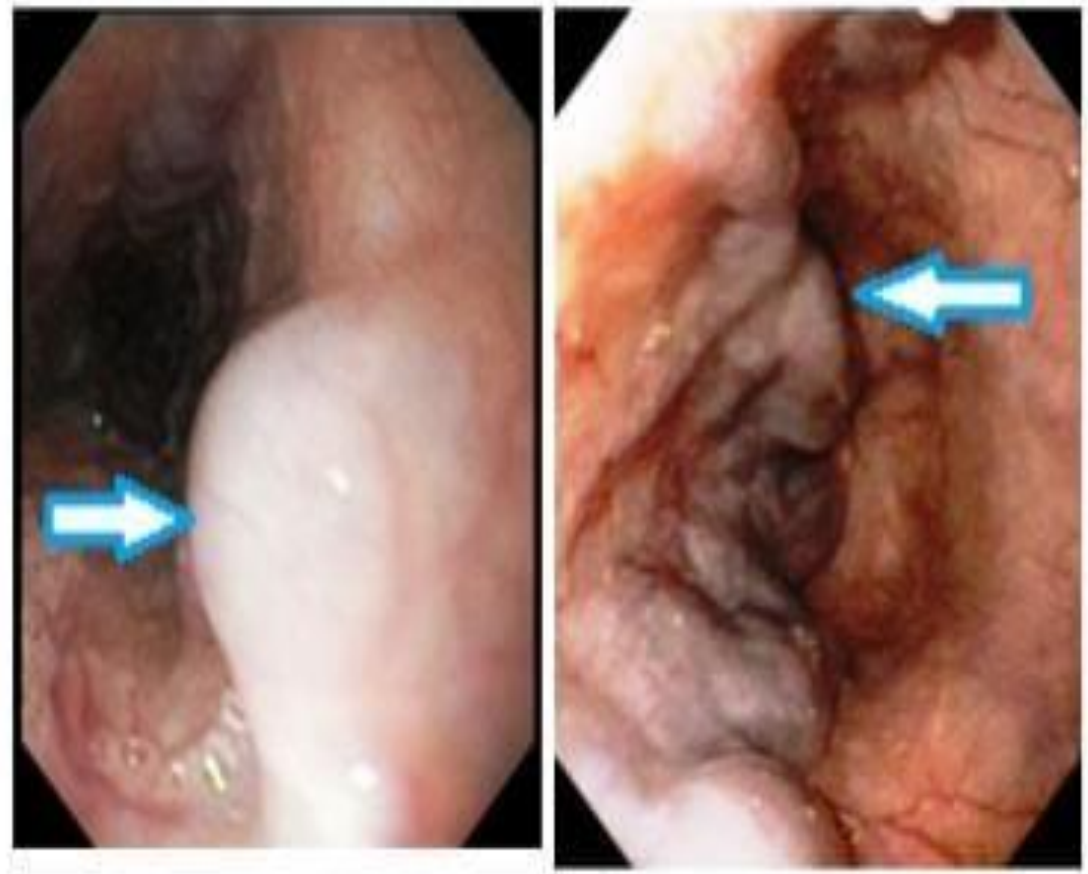
Portal hypertension

- Rise in blood pressure due to increased portal blood coupled with obstructed blood flow through the liver

- Collateral vessels and gastroesophageal varices
  - Collaterals: blood vessels that enlarge or newly form
    - Allow an alternative pathway for diverted blood

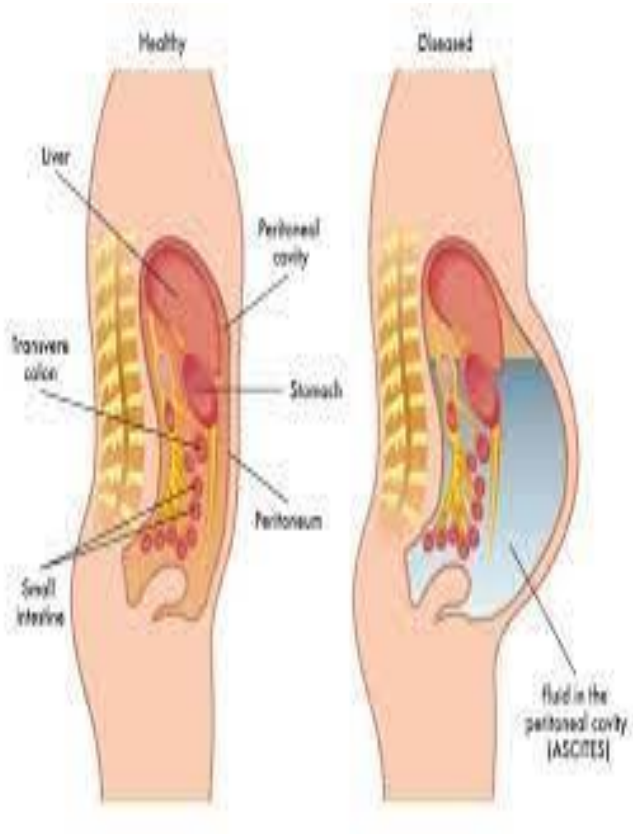
- Collateral vessels and gastroesophageal varices
  - Varices: abnormally dilated blood vessels
  - Esophageal and gastric varices
    - Vulnerable to rupture
    - Bleeding may be fatal


ESOPHAGEAL VARICES
Esophagus
Stomach



Ascites

- Large accumulation of fluid in the abdominal cavity
- Indicates a critical stage of liver damage
- Causes:
  - Portal hypertension
  - Sodium and water retention in kidneys
  - Reduced albumin synthesis in liver


Healthy
Diseased
Liver
Peritoneal cavity
Transverse colon
Stomach
Peritoneum
Small intestine
Fluid in the peritoneal cavity (ASCITES)


FREE FLUID

- Hepatic encephalopathy
  - Abnormal neurological functioning
  - Signs: adverse changes in personality, behavior, mood, mental ability, and motor functions
  - Fully reversible with treatment

- Elevated ammonia levels
  - Healthy liver converts blood ammonia to urea
  - In advanced disease, liver is unable to process the ammonia sufficiently
  - Ammonia-laden blood bypasses the liver via collateral vessels
    - Reaches the general blood circulation and thereby, brain tissue

TABLE 19-3 Clinical Features of Hepatic Encephalopathy

Early Stages	Middle Stages	Later Stages
• Personality changes • Short attention span • Depression, irritability • Lack of coordination • Tremor • Sleep disturbances	• Mood and behavior changes • Disorientation • Lethargy • Slurred speech • Pronounced tremor • Changes in sleep–wake cycle	• Confusion, amnesia • Somnolence to semi-stupor • Involuntary eye movements • Muscular rigidity • Abnormal reflexes • Coma

- Malnutrition and wasting
  - Some degree of wasting in most patients with advanced cirrhosis
  - Possible causes of malnutrition
    - Reduced nutrient intake
    - Malabsorption or nutrient losses
    - Altered metabolism or increased nutrient needs

- Treatment of cirrhosis
  - Objectives: correct the underlying cause of disease; prevent or treat complications
  - Supportive care
    - Appropriate diet
    - Avoidance of liver toxins
  - Medications to treat complications
    - Be aware of diet-

- Nutrition therapy for cirrhosis
  - Customized to each patient's needs
  - Energy
    - 25 to 40 kcal/kg dry body weight per day
    - Four to six small meals
    - Oral supplements

- Protein
  - 1.0 to 1.5 g/kg dry body weight/day
  - Branched-chain amino acids (BCAA)
- Carbohydrate and fat
  - Medications or insulin to treat insulin resistance
  - Carbohydrate and glucose control
  - Fat may be restricted to <30% of kcal with steatorrhea

- Sodium
  - What restrictions are necessary to control ascites?
  - Surgical treatments: paracentesis, transjugular intrahepatic portosystemic shunt
- Vitamins and minerals
  - Deficiencies common; nutrient supplementation often necessary

- Food safety: to avoid foodborne illness
- Enteral and parenteral nutrition support
  - Tube feedings
    - Supplement or replace oral intakes
    - Standard formula; or energy-dense formula for patients with ascites
  - Parenteral nutrition support for patients unable to tolerate enteral feedings

Liver Transplantation

- Overview
  - Most transplants preceded by chronic hepatitis C or alcoholic liver disease
  - Five-year survival rate of 54% to 81%

- Posttransplantation concerns
  - Stress of surgery increases protein and energy requirements
    - High-kcal, high-protein snacks and oral supplements
  - Vitamin and mineral supplementation
  - Food safety measures

Metabolic Associated Fatty Liver Disease (MAFLD)

- What is MAFLD?

MAFLD is a condition where excess fat builds up in the liver.

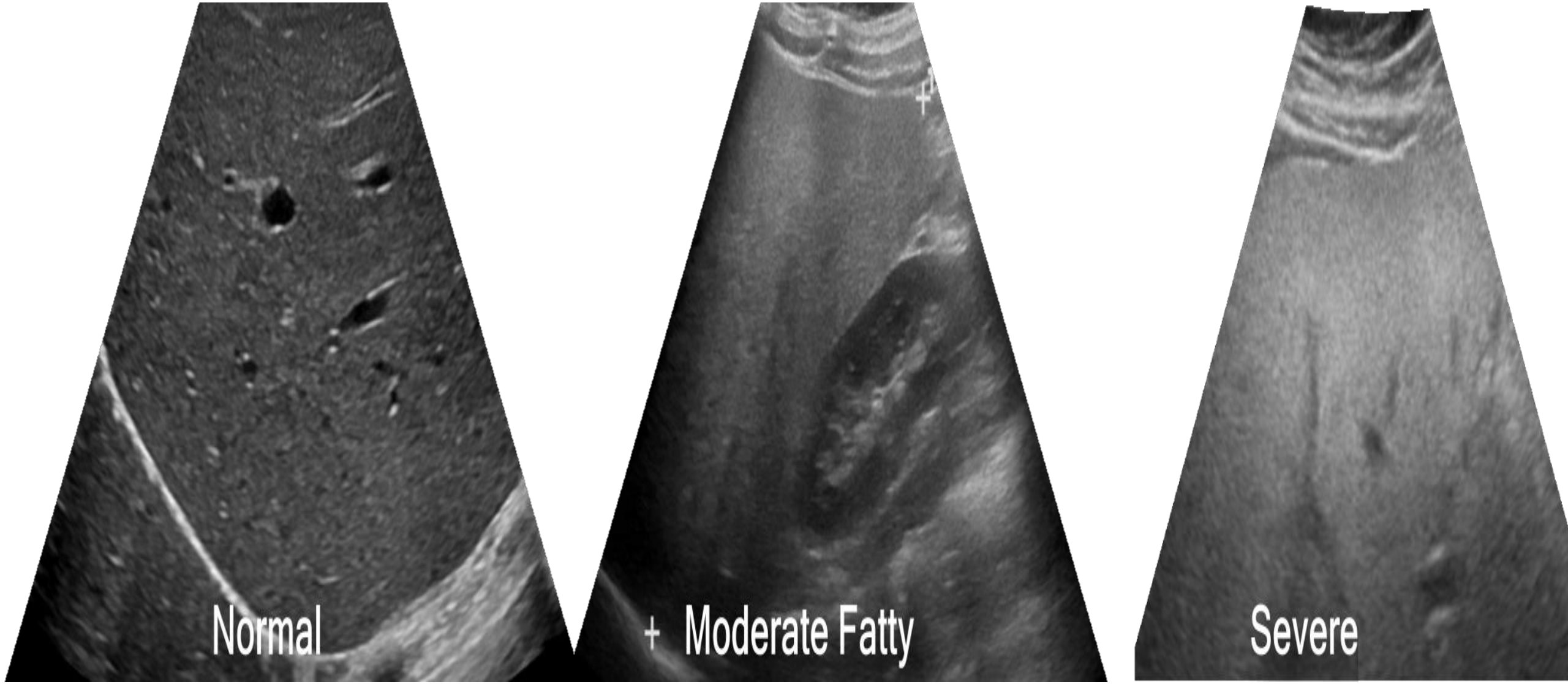
- Risk factors include:
- • Being obese or overweight
- • Having diabetes
- • Having high blood cholesterol and triglyceride levels

Are MAFLD and NAFLD the same?

- • In the past, fatty liver was called non-alcoholic fatty liver disease, also known as NAFLD.
- The estimated global incidence of NAFLD is 47 cases per 1,000 population and is higher among males than females.
- Recently however, a decision was made between clinicians and patients to change the
- name to MAFLD to better describe the condition.

What are the effects of MAFLD?

- MAFLD does not always cause harm to the liver, but it can:
- • Increase risk of diabetes, heart attack or stroke
- • Progress to more severe liver disease. The fat around the liver can cause inflammation
- of the liver. Ongoing inflammation may cause cirrhosis (irreversible scarring of the liver),
- which can lead to liver failure.


Normal
+ Moderate Fatty
Severe

Management of MAFLD?

- • Avoid smoking and alcohol
- • Participate in regular exercise
- • Eat a healthy balanced diet
- • Have good blood sugar control (if you have diabetes)
- • Treat high blood pressure and high cholesterol

To reduce the risk of developing MALFD you can:

- 1. Eat a healthy diet
- 2. Reach a healthy weight
- 3. Increase exercise

1. Eat a healthy diet

- Base meals on whole foods from the Mediterranean diet
- 1. Vegetables – add as many vegetables as you can to your meals and snacks.
- 2. Fruit – eat at least two pieces of fruit per day.
- 3. Add olive oil to your food (up to 3 tablespoons per day).
- 4. Include fish at least twice weekly.

1. Eat a healthy diet(cont.)

- 5. Choose low fat meat or meat alternatives like chicken, eggs, and legumes (e.g.
- chickpeas, kidney beans, and nuts).
- 6. Reduce red meat to once per week or on special occasions.
- 7. Choose grainy breads and cereals, rice and pasta.
- 8. Choose low fat dairy (e.g. milk, yoghurt, cheese).

2. Reach a healthy weight

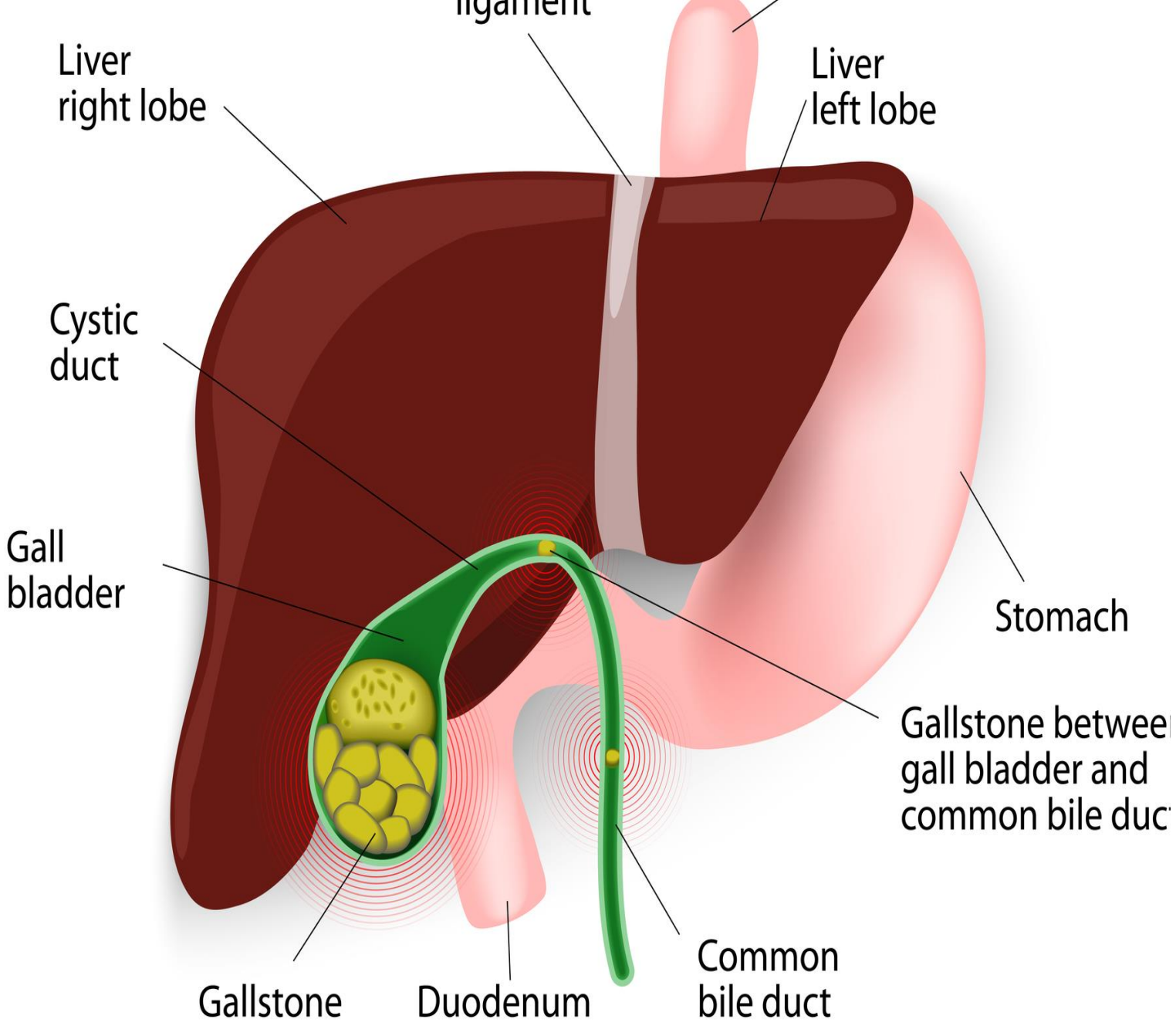
- If overweight, losing 5-10% of body weight can:
- • Decrease fat in the liver
- • Improve blood sugar control
- • Improve blood pressure

- Goal waist circumferences:
- Females: Initially: less than 88cm
- Long term: less than 80cm
- Males: Initially: less than 102cm
- Long term: less than 94cm

3. Increase exercise

- • to reach a healthy weight and to decrease risk of developing diabetes and help control blood sugar.
- At least 150 minutes of moderate intensity exercise per week (30 minutes of activity 5 times per week), increasing to 30-45 minutes daily.

Gall stones


ligament
Liver
right lobe
Liver
left lobe
Cystic
duct
Gall
bladder
Stomach
Gallstone betwee
gall bladder and
common bile duc
Gallstone
Duodenum
Common
bile duct

Definition

- “Cholelithiasis is the presence of stones in the gallbladder - *chole*- means "gall bladder", *lithia* meaning "stone", and -*sis* means "process".

- *Cholelithiasis is the formation of gallstones, which are composed of cholesterol, calcium salts, and bile pigments.*

- ***Cholesterol stones*: 80% or more cholesterol.**

  They appears **yellow** in colour and are **oval in shape** with a **dark spot in the centre.**

- ***Pigment stones*: less than 20% cholesterol.**

  They are either **black or brown** and form when bile has **high bilirubin concentration.**

- ***Mixed stones*: Between 20 and 80% cholesterol**

  along with other

Risk Factors

- Women (multiparity).
- Age > 60 years
- Sedentary life style.
- Overweight or obese men and women
- People who tend to fast or lose weight quickly
- Family history of gallstones
- Diabetes
- Diet high in cholesterol
- Use of OCPs
- Pregnancy

signs and symptoms

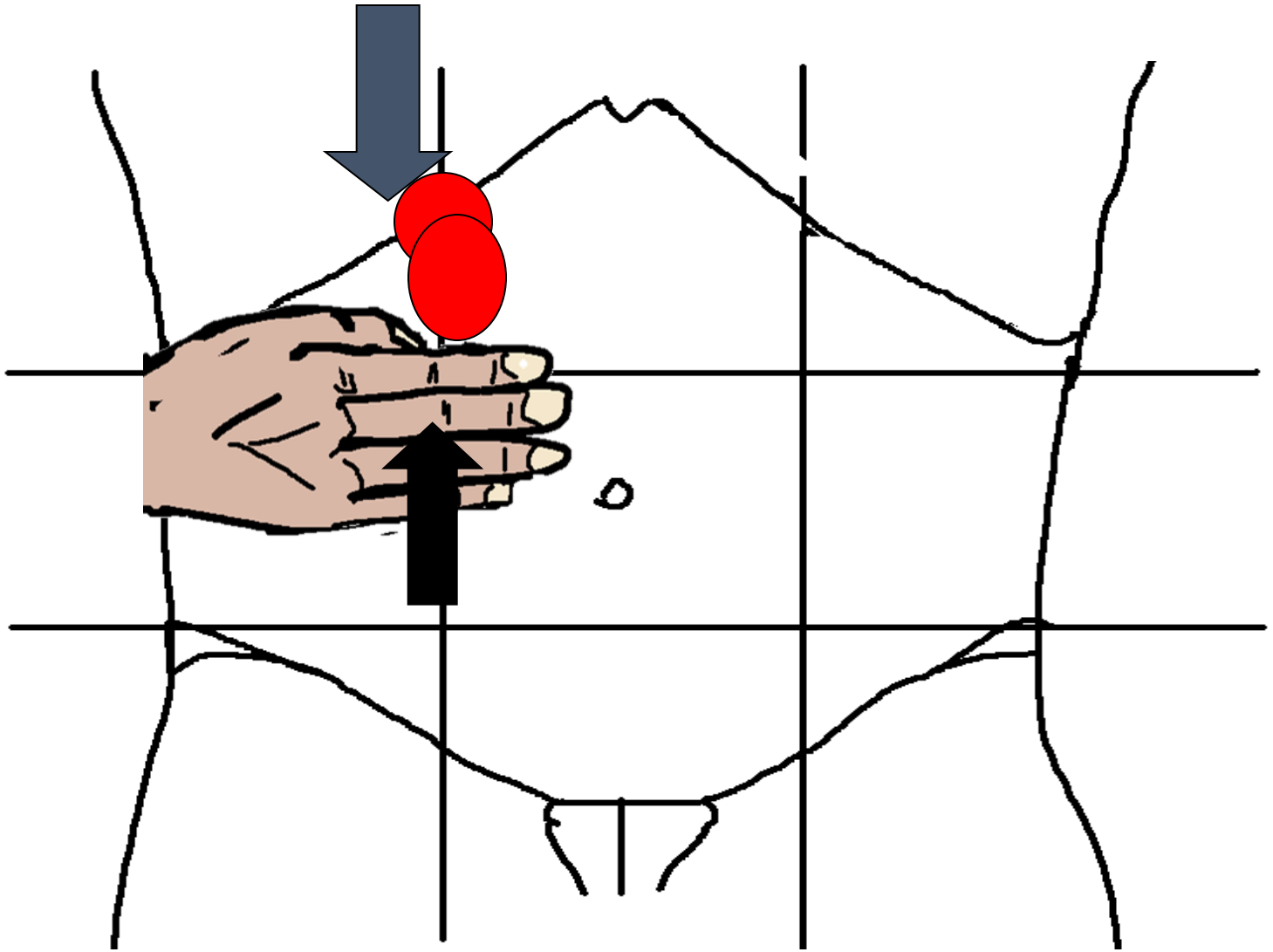
- *There are three stages of gallstones: asymptomatic, symptomatic, and with complications. Sixty to 80% of gallstones are asymptomatic, meaning that they cause no symptoms.*

If gallstones become sympt

If gallstones become symptomatic, the person may have the following symptoms:

- a feeling of abdominal bloating and excessive gas
- nausea and sometimes vomiting
- pain that is usually in the upper right or middle part of the abdomen
- radiation of the pain through to the back or into the shoulder
- worsening of the pain after a heavy or fatty meal

Murphy's Sign: Inspiratory arrest with manual pressure below the gallbladder



- It is important to know that there is no specific diet or food that has been proven to prevent gallbladder disease. The following suggestions may help:

- Diet. high in fiber including fruits and vegetables (at least 7 or more servings a day) and whole grain products (whole wheat bread, pastas, rice, crackers).
- Limit refined sugar such as sweetened beverages (pop, juice, juice beverages), candy, sweet desserts and foods with added sugar (such as flavoured yogurts, condiments etc.).

- Eating a small portion of nuts a few times a week. Eating 140 g (1 cup) of nuts per week is associated with a reduced risk of gallstone disease and (cholecystectomy).
- Lower fat dairy products such as 1% MF (milk fat) milk, 2% or less MF yogurt,20% MF cheese, low fat sour cream, low fat cream cheese

- Choose leaner meats and poultry. Remove the skin and excess fat from poultry .
- Meat alternatives such as lentils, chickpeas, beans and tofu.
- Cooking methods such as barbequing, baking, broiling and grilling more often than frying foods.

- Research shows that following a severely fat restricted diet is inappropriate for the treatment of gallstones.
- It is encouraged to consume a healthy diet with moderate

amounts of fat: 20-30% of calories from fat.

- This equals 2-3 tbsp of fat each day. Use healthy fats such as canola oil, olive oil, soybean oils.
- A diet too low in fat may actually lead to gallstone formation secondary to inadequate bile production.

- Limit caffeinated beverages to three 8 oz (250 ml) cups per day. This includes coffee, tea, cola beverages.
- Limit alcohol .

- Diet modifications may not offer any advantages for gallbladder disease before surgery as
- the passage of gallstones into the ducts is a random event unrelated to the type of food.
- POST CHOLECYSTECTOMY there is no evidence to support the need for a fat restricted diet after surgery.
- Following gallbladder removal and a normal diet should be tolerated soon after surgery.