

***Sheet no. : 8***

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**Upper gastrointestinal surgical diseases**

**\*We can divide the GI system:**

**1- Conventional terminology: a- Upper GI: mouth-esophagus-stomach-small bowel down to the ileum (ileocecal valve). b- Lower GI: started from the cecum (the first part of the colon). It consists of colon, rectum, anus.**

**2- Embryologically: a- Foregut: from the mouth until the ampulla of vatar which is located halfway along the second part of the duodenum (inside it there are bile and pancreatic ducts). So it consists of mouth, esophagus, stomach, 1st part of the duodenum, half of the 2nd part of the duodenum until the ampulla of vatar. Roughly it is considered as the uperr GI. b- Midgut. c- Hindgut:**

**3- According GI bleeding: It is a serious common disorder in the GI system a- Upper GI bleeding: when the bleeding is proximal to ligament of treitz (It is between the duodenum and jejunum). “Esophagus, stomach, duodenum). b- Lower GI bleeding: below the ligament of treitz.**

**\* Upper GI surgical diseases: 1- Esophageal. 2- Gastroduodenal diseases. 3- Biliary diseases. 4- Pancreatic diseases.**

**1- Esophageal diseases:**

**A- Gastro esophageal reflux disease “GERD”: \* The most common and the most important one. - Definition/Cause: There is a reflux of the gastric contents that exceeds the normal limit. \* So in the normal status there is a reflux, but when it exceeds the normal limits the esophagus will be unable to clear down theses gastric contents. \* The problem is that there is a difference in the Ph, the gastric contents have more acidic Ph than the esophageal medium, so when the esophageal mucosa is exposed to acidic material it will give symptoms and cause discomfort to the patient and finally it will develop changes in the mucosa that may eventually end in malignancy “barrett esophagus”. \* 10% of the normal population suffer from GERD in their life. \* Esophageal symptoms: 1- heart burn. 2- vomiting. 3-regurgitations “When the patient eats and then sleeps he feels that the food is coming back to his throat”. \* Extra-esophageal symptoms and manifestations: cough, hoarseness, aspiration pneumonia “due to regurgitation of GI contents into the respiratory system. Some patients have retrosternal chest pain and go to cardiology department and find that the primary problem is GERD. \* Management: - We don’t start with medications because of their cost and some patients have allergy to them. 1- Lifestyle modifications: - Decrease weight: one of the most important things because this will decrease intra-abdominal pressure. - Small frequent meals rather than large few meals. - Avoid things that relax the esophageal sphincter such as cola and coffee. - Avoid food that induce the reflux. - Avoid lying down immediately after eating. 2- Medical management: - Two types: a- H2 blockers: ranitidine “famodar” ( I googled it and found that the generic name of famodar is famotidine not ranitidine so…..!). b- PPI “proton pump inhibitors”. - Usually they relief symptoms and at least stop the progression of the mucosal changes which is the significance of the GERD “barrett esophagus”. But they don’t normalize the transformed mucosa, once there is barrett esophagus the treatment will be resection or continuous surveillance. \* How do we diagnose: 1- History. 2- Upper endoscopy: to see if there are mucosal changes OR hiatal hernia “protrusion (or herniation) of the upper part of the stomach into the thorax through the esophageal hiatus” which is a risk factor for GERD. 3- Radiologic imaging: Shows reflux of the contents. 4- Standard criteria for diagnosis of GERD is ambulatory 24 hours Ph monitoring.**

**B- Esophageal motility disorders: \* These disorders of the function of the esophagus. \* Esophagus functions are: 1-to move the food down to the stomach of contraction of the smooth muscles to make peristalsis in the esophagus. 2- to prevent reflux of the gastric contents into the esophagus. - Peristalsis: symmetrical contraction and relaxation of the muscles. \* What are the conditions in which there is an impairment of the functions of the esophagus??? 1- Primary conditions: the whole problem is in the esophagus. A- Achalasia: - Most common. - It is a neurological problem in the esophagus leads to loss of the peristalsis and loss of relaxation of lower esophageal sphincter, so the food will accumulate and this will make the esophagus appears as “bird beak” (upper part is wide because there is no peristalsis and the food accumulates and cause dilatation of the esophagus, lower part is tight because it can’t expand). - Treatment: a- medical: they may respond to nitrates “smooth muscle relaxants”, or CCB “calcium channel blockers”. b- Surgical: The definite treatment is heller myotomy (the lower esophageal sphincter is tight, so we cut the smooth muscle). - Most of the patients do not respond adequately to the medical treatment so they eventually need surgical treatment and usually they improve. B- Diffuse esophageal spasm: - It is persistent, non-progressing- not smooth, high amplitude contraction in the esophagus. - Retrosternal chest pain confused with cardiac pain or heart burn. - Diagnosis: We use “Manometry” to measure the amplitude of the pressure in the esophagus induced by smooth muscles contraction. - Management: It is medically more than surgically. 2- Secondary conditions: - Systemic problems in the whole body the esophagus is one of the organs that are affected like Scleroderma: - One of the most common disorders that affect the esophagus. - Diffused sclerosis and fibrosis in different parts of the body, one of them is the esophagus. - So smooth muscles are replaced by non-contracting and non-peristalsising fibrous tissue. So they will have the same picture of achalasia.**

**2- Gastroduodenal diseases :**

**\*\*\* peptic ulcer: \* Ulcer: mucosal “epithelial” discontinuity or atrophy. \* It is either gastric or duodenal. \* They are different in: 1- Site: - Gastric: stomach. - Duodenal: Duodenum. 2- Symptoms: \* Both of them are characterized by epigastric pain - Gastric: Pain is not relieved by eating food it is aggravated by eating. - Duodenal: Pain is relieved by eating food, so there is weight gain. \* So we have to ask the patient if the pain is aggravated or relieved by eating. 3- Cause/ Mechanism: - Gastric: H.pylori bacteria cause atrophy to GI mucosa and this leads to loss of the protective mechanisms of the gastric mucosa (bicarbonates, mucus), usually the acid amount is normal or low. - Duodenal: Acid secretion from the stomach is high (High acid amount). 4- Diagnosis: a- From the symptoms. b- Upper endoscopy: standard and definite diagnosis. - There is a high percentage of the gastric ulcers that are caused by malignancy especially if the patient doesn’t have the usual risk factors and he is elderly. - So if we did upper endoscopy and found gastric ulcers we give the appropriate treatment, but we should take a random biopsy from the area and repeat the upper endoscopy 4-6 weeks later to prove that it is healed. If no healing occurs we re-take a biopsy to prove that it is not malignant or to find the malignant cause. In duodenal ulcers we don’t have to redo the upper endoscopy later. 5- Treatment: we do endoscopic biopsy for H.pylori, if it is positive: - culture. - histological test. - Take the biopsy to the h istopathology. a- Medical treatment: Depends on the findings: - Proton pump inhibitors “PPI”. - Antacids. - H.pylori eradication by regimen of antibiotics + amebazole for 10-14 days. b- Surgical: - Duodenal: it is due to high acid secretion so we do vacotomy (vagus is the stimulus for the acid secretion) and removal of the ulcer. \* vacotomy can be partial or high selective for certain fibers (below the hiatus). It has side effects : Diarrhea “related to the bowel”. - Gastric: resection of the ulcer. \* Nowadays the surgical treatment has been decreased due to the medical treatment. We go for surgical treatment if (indications): 1- Vacotomy. 2- Complications of peptic ulcers “IHOP”: I: intractability “the patient is not improving”. H: hemorrhage. O: obstruction. P: perforation.**

**\* H.pylori story: In the past, they found bacteria in the autopsies from people who died due to peptic ulcer disease, but there was a debate on this because they thought that the main issue with the peptic ulcer is the acid. In 1980s, a medical resident with his consultant in Australia cultured the organisms from the upper endoscopy autopsies from the stomach of patients with peptic ulcer disease. They found that there is a certain type of organisms in all the autopsies, they tried to prove that he is wrong. After many attempts to convince people of his findings, he eventually drank a solution of H.pylori so he got a poetic ulcer. Finally he defined the main pathology of peptic ulcer which is H.pylori after 25 years! And he got a Nobel prize.**

**3- Biliary diseases :**

**A- Gall stones: \* Gall bladder function is storage of the bile \* We can find them by ultrasound. \* Two types: 1- Cholesterol stones: - 75%. - precipitation of cholesterol crystals due to: a- Increased lipid content in the solvent (bile) “oversaturation of the bile with lipid”. b- Decreased bile salts solvents. - Risk factors: a- Hyperlipidemia NOT hypercholesterolemia. b- Rapid weight loss. c- Prolonged fast. d- Prolonged fasting, like before surgeries it induces the stasis in the gall bladder. e- 4 F: female, forty, fat, fertile. 2- Pigment stones: - Brown: The core is bacteria. It is caused by infection. - Black: composed of** **calcium bilirubinate. Formed because of hemolytic “bleeding” and liver cirrhosis. B- Biliary colic: \* One of the consequences of the gall stones. \* It is caused by obstruction of the cystic duct by the gall stones. \* It is misnomer to call it colic, because colic means contraction and there is no smooth muscle in the gall bladder. \* It is a persistent pain. \* The patient comes with pain after 30 min from eating fatty food, the an hour the pain goes away. \* If it is symptomatic the treatment is removal of the gall bladder. \* There is no medication to remove the stones and keep the gall bladder. \* When there is obstruction of the gall bladder, there will be stasis and bacterial overgrowth then acute cholecystitis. C- Acute cholecystitis: 1- Most of the acute cholecystitis is caused by calculus “stones” obstructing the neck of the bladder which leads to stasis and bacterial overgrowth. 2- Minority of the acute cholecystitis is acalculus “Not caused by calculus”. It is caused by other etiological factors like ischemia, elderly,……………….. . \* The pain is more severe, prolonged and persistent in comparison with biliary colic. \* Right upper quadrant pain radiating to the interscapular area or right shoulder. \* It could be associated with systemic symptoms like nausea, vomiting, fever, leukocytosis because it is an infection. \* Examination: -Tenderness. - Murphy's sign: you ask the patient to take a breath while putting your hand on his right waist, then he will suffer from sudden respiratory arrest that he can’t take a breath anymore. “Because when he breathes the liver with the gall bladder will get down, when it contacts your hand there will be tenderness because it is inflamed”. \* Treatment: - The definite treatment is the removal of the gall bladder because the recurrence rate is high. - There are two lines of treatment: 1- During the golden period: first 72 hours, we give the patient antibiotics then remove the gall bladder. 2- If the patient comes beyond the first 72 hours: we do interval cholecystectomy, it means we give him antibiotics till the inflammation resolves then come back to him after 4-6 weeks. Because the inflammation and edema and swelling will be more severe and it will be hard to make laparoscopic surgeries without scars and complications of the wound. Nowadays there are some professional surgeons who can do laparoscopic surgeries in both cases.**

**4- Pancreatic diseases :**

**\* Acute pancreatitis and chronic pancreatitis. \* Pancreas contains amylase, lipase, things that digest food. Why don’t these digestive enzymes digest the pancreas itself??? Because it is not activated, it needs a certain Ph to be activated. - If there is an obstruction of the pancreatic duct by stones from the gall bladder through the common channel or by tumors, these enzymes will be activated and cause pancreatitis. - Pancreatitis is a serious condition, it leads to loss of fluids in the third space in the body and the patient becomes in shock and it induces SIRS “systemic inflammatory response syndrome”. - Third space: The fluids are either intravascular or intracellular “Two spaces”, the third space is interstitial due to edema in this case it is abdominal edema, it is abnormal and due to pancreatitis that induces SIRS that leads to vasodilatation and increases the permeability. - Distinctive features of pancreatitis: epigastric pain radiating to the centre of the back relieved by leaning forward. - Most common causes of pancreatitis: gall stones “biliary” and alcohol. In our country it is gall stones, in western countries alcohol is equal to gall stones. - Other causes: hyperlipidemia, tumors, medications (steroids, diuretics, azathioprine), scorpion bite. – Chronic pancreatitis: ends with replacement of the pancreatic tissue with fibrous tissue “fibrosis” which leads to loss of the function of the pancreas “like in diabetic patients”. \* How to categorize patients of pancreatitis? How severe is the pancreatitis? - There are scoring systems, one of them is ranson criteria. \*\*\* Ranson criteria for pancreatitis: -24-48 hours. - In the first 24 hours the patient comes to us we record the age, WBCs, blood sugar, AST “aspartate aminotransferase”, LDH, and the score of the pancreas. - After 48 hours, we record Ca, hematocrit, kidney function test, fluid sequestration, and the score. - Score: 1-2 , mortality rate is less than 5%. 3-4 , mortality rate is 15%. 5-6, mortality rate is 50%. More than 7, mortality rate is more than 50%. \* How do we diagnose pancreatitis? - History. - Physical examination. – Amylase test “in pancreatitis it is usually high”.**

**\*\*\* Upper GI bleeding:**

**\* Definition: It is a bleeding proximal to ligament of treitz “esophageal or gastric”. \* Causes: - Most common cause is peptic ulcer disease. - Other causes: esophageal varices, gastritis, Dieulafoy's ulcer “early malformation in the mucosa”. \* Symptoms and management next time.**