

Disorders of the Small Intestine

- **Abnormal Digestion of Food in the Small Intestine(Pancreatic Failure)**
- Lack of pancreatic secretion frequently occurs
- In *pancreatitis* في acute وفي chronic، ال chronic هي التي بتعمل deficiency in the pancreatic secretion
- When the *pancreatic duct* is blocked by a gallstone at the ampulla of Vater.
- When *head of the pancreas* has been removed because of malignancy.

أو لو شلنا جزء من البنكرياس نتيجة truma أو حادث

- Loss of pancreatic juice means loss of trypsin, chymotrypsin, carboxypolypeptidase, pancreatic amylase, pancreatic lipase, and still a few other digestive enzymes.
- Without these enzymes, up to **60** percent of the fat entering the small intestine may be unabsorbed, as well as one third to one half of the proteins and carbohydrates.
- As a result, large portions of the ingested food cannot be used for nutrition and copious, fatty feces are excreted. (steatorrhea).

Pancreatitis-Inflammation of the Pancreas

■ Pancreatitis can be either *acute pancreatitis* or *chronic pancreatitis*.

شغل الجراح هو ال acute، ال chronic باطنة، بعالجوهم
وبعطوهم pancreatic enzymes ومرات بكونوا محتاجين
جراحة لو كان عندهم sever abdominal pain

The most common cause of acute pancreatitis are:

- Blockage of the papilla of Vater by a Gall bladder stone
- Drinking excess alcohol.

The two together account for more than 90 percent of all cases.

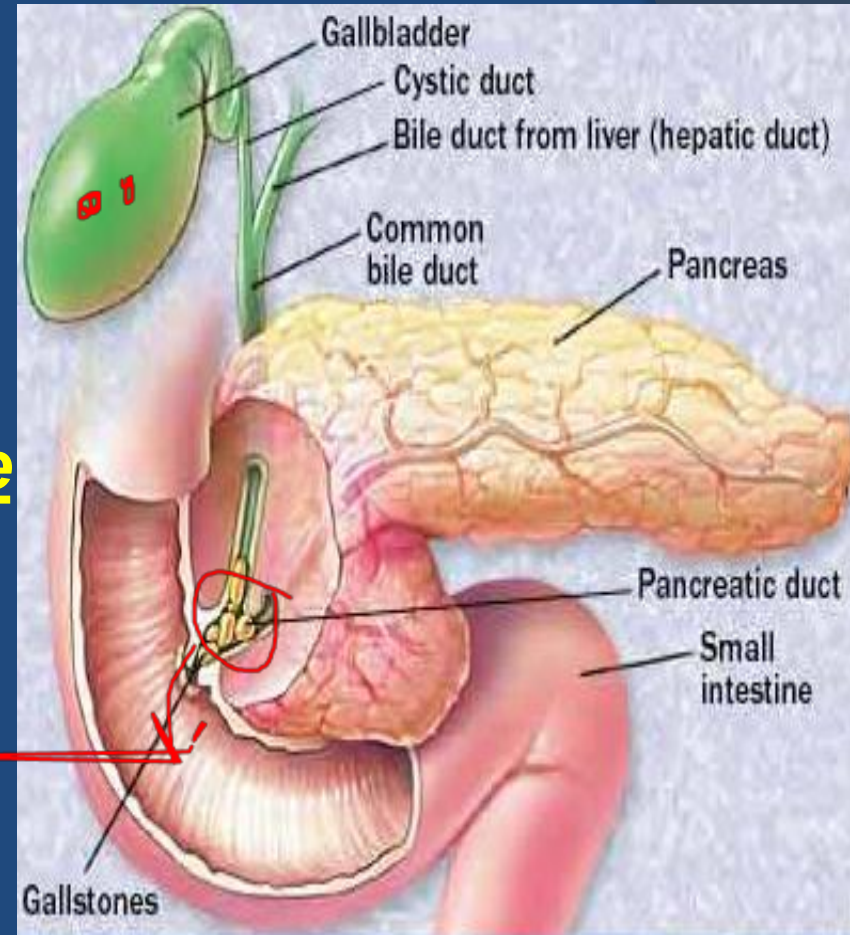
أهم سبب هو الحصوات (gall stones)، يتسبب ال common channel فيتعطل
back pressure على البنكرياس ويتعمل ال acute pancreatitis. بنسبة 75%-
80% يتنزل على ال duodenum، و 25% يتضللها مسكرة ويتعمل Jaundice

أهم سبب هو الحصوات
تاني أهم سبب هو ال alcohol

(Auto-digestion)

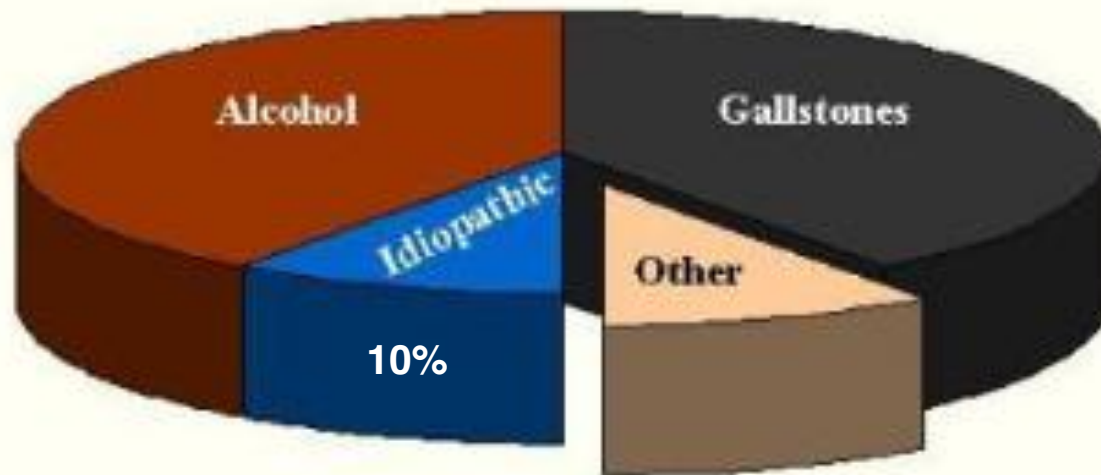
Of pancreas = acute pancreatitis

يعني مش bacterial inflammation، هو chemical inflammation



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Pancreatitis: Etiology



chemotherapy
زي ال

ال - viral infection يعمل pancreatitis وأهم
Mumps virus اسمه viral

- | | |
|-----------------------------|---------------------------------------|
| • <u>Drugs</u> | • <u>Trauma</u> Specially in children |
| • <u>Infectious agents</u> | • <u>Hypotension</u> |
| • <u>Hyperlipidemia</u> | • <u>Post-operative</u> |
| • <u>Hyperealcemia</u> | • <u>Miscellaneous</u> |
| • <u>Ductal obstruction</u> | |

Pancreatitis: Clinical Features

PREV : Pancreatitis: Local Effects of Enzymes

NEXT : Chronic Pancreatitis: Etiology

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Pancreatitis: Clinical Features

- فاش واحد عنده pancreatitis وما عنده
vomiting و sever abdominal pain

أكثر أسباب:

Gall bladder stones
cholecystitis
duodenum في ال قرحة منفجرة
Mesenteric ischemia
Intestinal obstruction

Signs & Symptoms

Sever Abdominal pain Radiating
to the back
Abdominal tenderness
Board like rigid
Nausea and vomiting
Fever
Tachycardia

Lab Tests

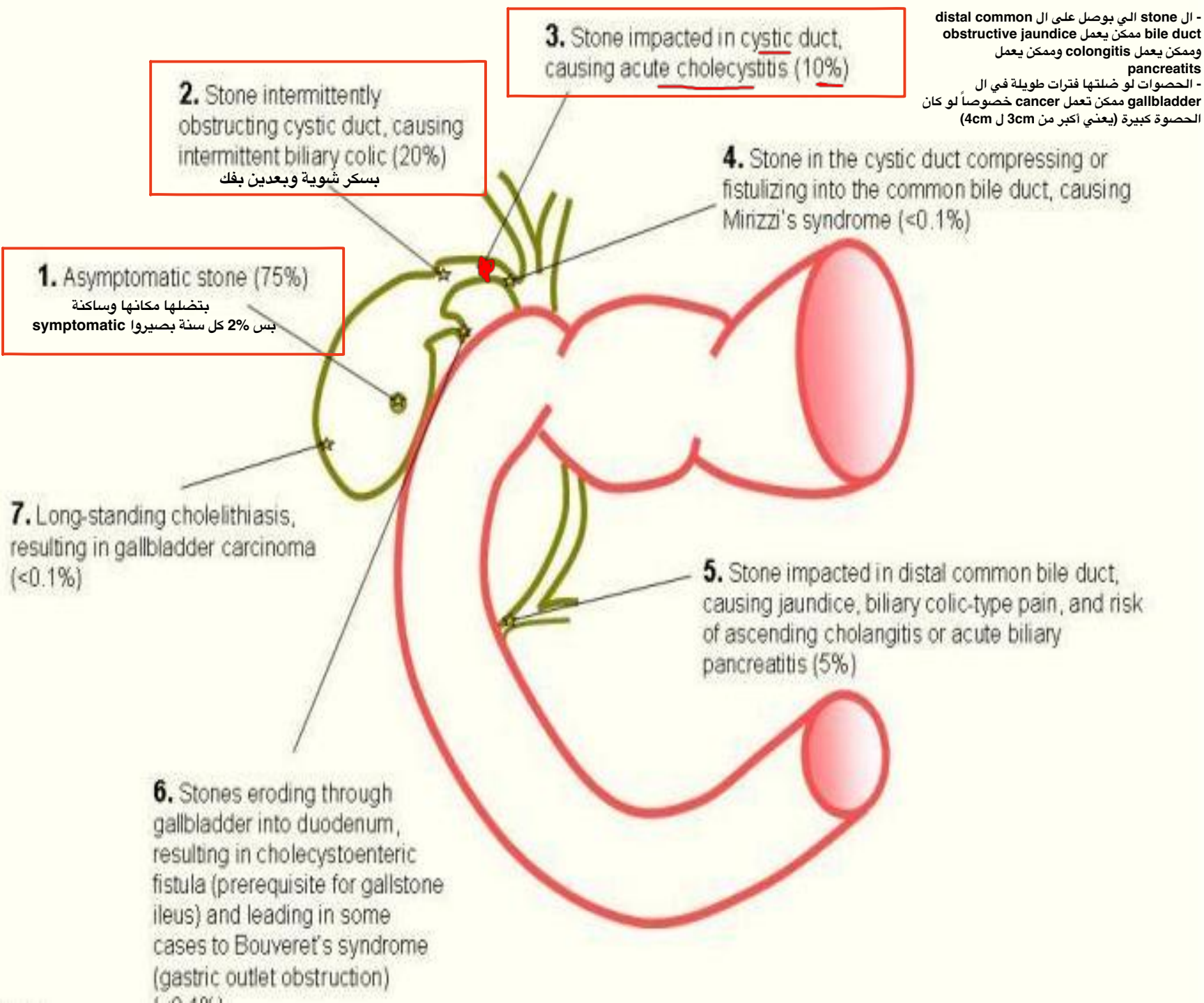
↑ WBC
↑ Serum amylase
↑ Serum lipase

diagnostic of pancreatitis 1000international unit من أكثر من هاد
أحسن و more pancreatic specific

حكينا عنهم قبل
مثلاً عنا عيان دخل عنده sever abdominal pain
في ال epigastric region وبسَمع على
ظهره، وال serum amylase 1000 بقله خلص
هاد pancreatitis، دورلي ع السبب، طلع السبب
مثلاً gall stones، خلص فهاد pancreatitis

Differential Diagnosis

Cholelithiasis
Perforated ulcer
Mesenteric ischemia
Intestinal obstruction
Salpingitis
Ectopic pregnancy



ال stone الي يوصل على ال distal common bile duct
 - obstructive jaundice ممكن يعمل
 ويمكن يعمل colangitis ويمكن يعمل pancreatitis
 - الحصوات لو ضللتها فترات طويلة في ال
 gallbladder ممكن تعمل cancer خصوصاً لو كان
 الحصوة كبيرة (يعني اكبر من 3cm ل 4cm)

Malabsorption by the Small Intestinal Mucosa-Sprue

الأعراض: إسهال، نفخة،
abdominal distension،
dyscomfort، مش شغلات
specific يعني

- **Sprue:** are diseases which lead to decrease mucosal absorption
- Malabsorption also can occur when large portions of the small intestine have been removed.
- **Non Tropical Sprue :** (idiopathic Sprue, celiac disease (in children), or gluten enteropathy)

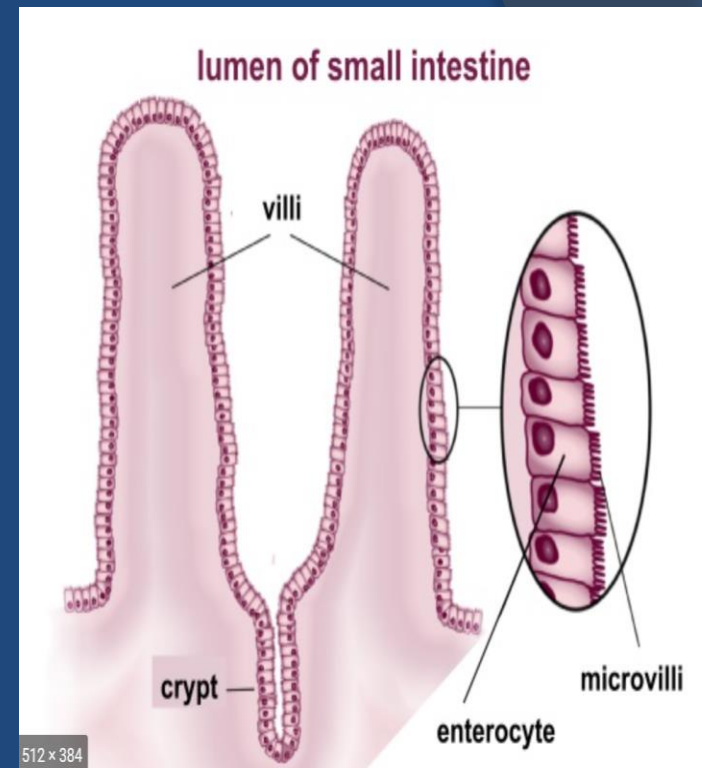
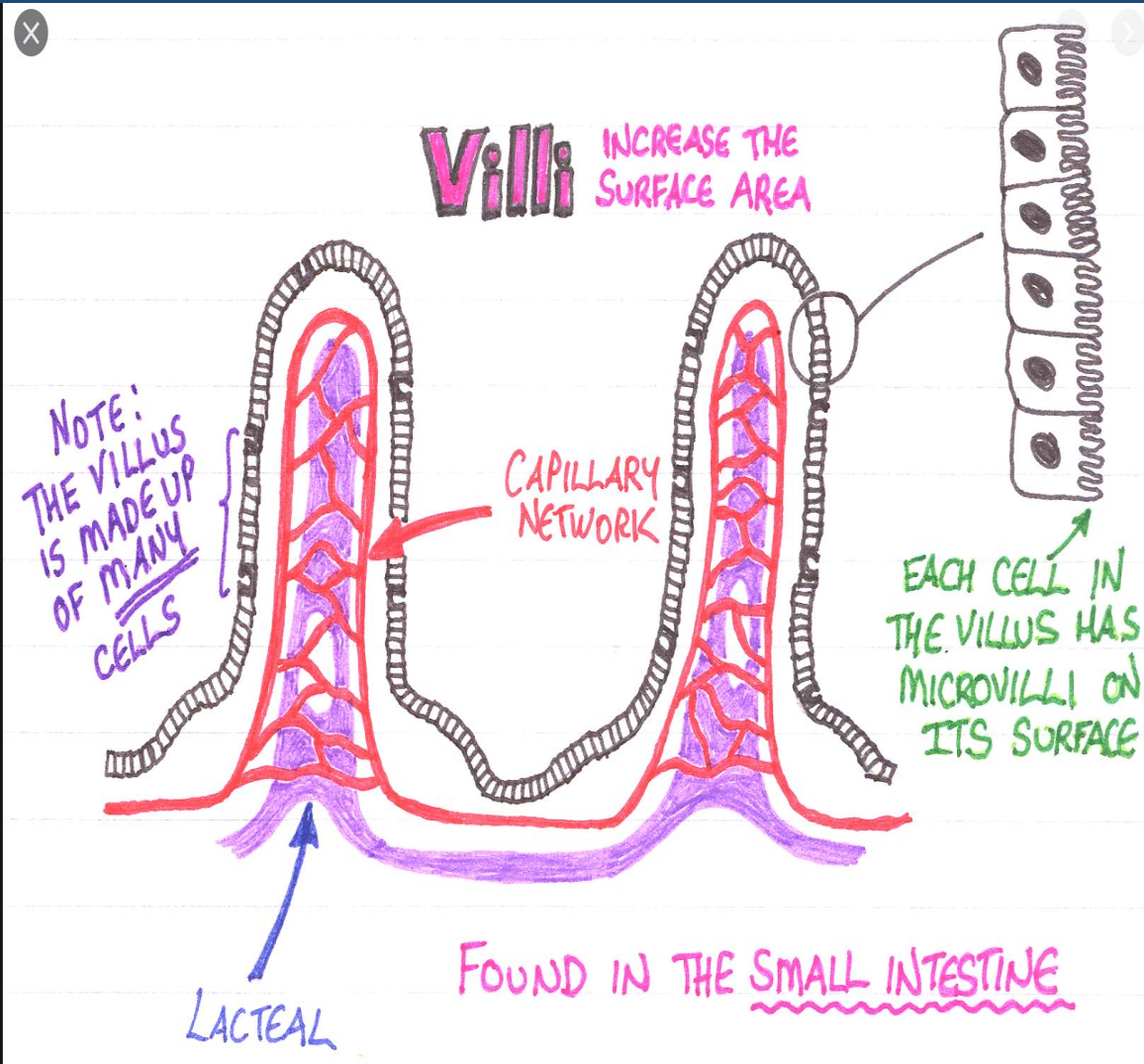
بنسبته حساسية قمح

Results from the toxic effects of *gluten* present in certain types of grains , especially wheat& rye.

ال gluten بأثر على ال Vili

- Gluten has a direct destructive effect on Intestinal Enterocytes.
- In milder forms of the disease, only the microvilli of the absorbing enterocytes on the villi are destroyed, thus decreasing the absorptive surface area as much as two fold.
- In the more severe forms, the villi themselves become blunted or disappear altogether, thus still further reducing the absorptive area of the gut
- Treatment

كأنه تقصص نصها الي فوق



Tropical Sprue

Caused by inflammation of the intestinal mucosa resulting from unidentified infectious agents.

Malabsorption in Sprue

In the early stages of Sprue, there is impaired absorption of fat only.

هلقيت لو لقيت في ال stool digested fat هاد معناها انه ال pancreas عمل شغله بس ما صار امتصاص في ال small intestine لأنه ال villi متضررة، لكن لو لقينا undigested fat معناها المشكلة في ال pancreas، والإثنين بعملوا ال steatorrhea.

The fat that appears in the stools is almost entirely in the form of salts of fatty acids rather than undigested fat, demonstrating that the problem is one of absorption, not of digestion. In fact, the condition is frequently called **Steatorrhea** which means simply excess fats in the stools.

■ In severe cases of Sprue, there is impaired absorption of fat, proteins, carbohydrates, calcium, vitamin K, folic acid, and vitamin B₁₂.

As a result, the person suffers from:

- Severe nutritional deficiency, developing wasting of the body. يعني العضلات بصيرلها wasting، يعني hypoproteinemia
- Osteomalacia (demineralization of the bones because of lack of calcium);
- Inadequate blood coagulation caused by lack of vitamin K
- Macrocytic anemia of the pernicious anemia type, due to diminished vitamin B₁₂ and folic acid absorption.

Disorders of the Large Intestine

Constipation:

أي واحد كبير في السن وعنده إنسك حط في راسك
cancer colon لحد ما تثبت غير هيك، ولازم تعمله منظار

Constipation means slow movement of feces through the large intestine.

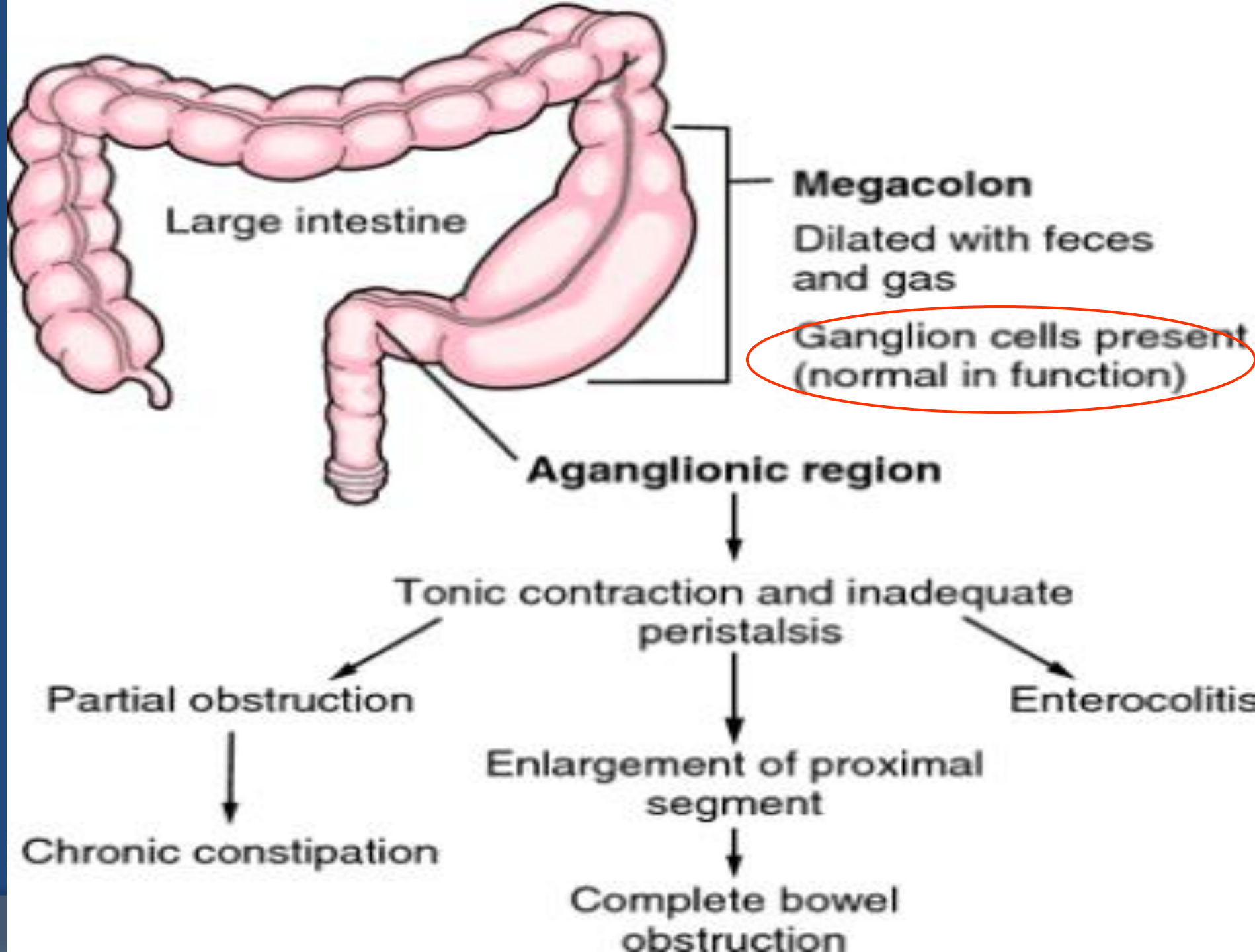
It is often associated with large quantities of dry, hard feces in the descending colon that accumulate because of overabsorption of fluid

- Tumors, Adhesions ,Ulcers(**organic**), Atony, Spasm(IBS) **functional**
- If a person establishes regular bowel habits early in life, defecating when the gastro colic and duodenocolic reflexes cause mass movements in the large intestine, the development of constipation in later life is much less likely.
- Alternating constipation and diarrhea.

فشل ال sigmoid و ال rectum في الأطفال في ال mini brain of the gut ، غالباً في

Mega colon (Hirschsprung's Disease)

- The colon sometimes distend to a diameter of 3 to 4 inches. (severe constipation) The condition is called *mega colon*, or *Hirschsprung's disease*.
- The cause of mega colon is lack of or deficiency of ganglion cells in the Myenteric plexus in a segment of rectum and lower sigmoid.
- The sigmoid itself becomes small and almost spastic while feces accumulate proximal to this area, causing mega colon in the ascending, transverse, and descending colons.



- ال mass movment بتكون بزيادة فبصير هاد الكلام

3.Ulcerative Colitis

بصير ~~mucus~~ مع bloody Diarrhea

بصير مع الشباب و البنات في سن ال 15 ل 25، في نوع بيجي بالكبار، بس المعظم في الصغار

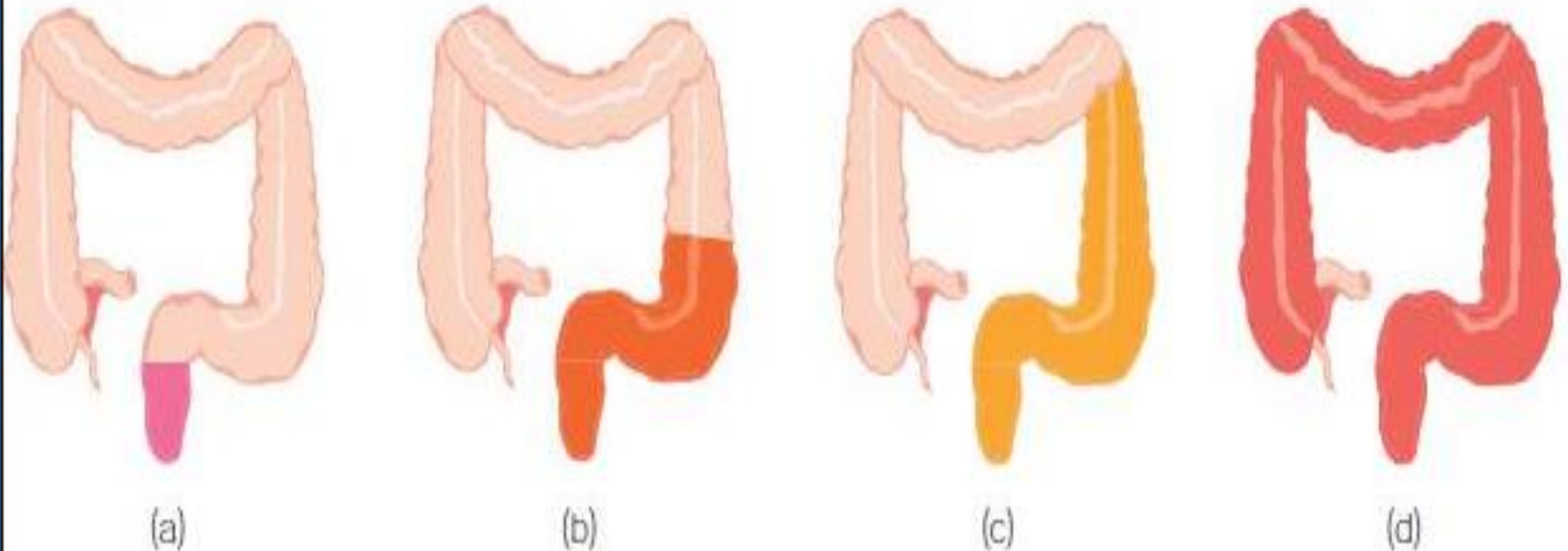
- Extensive areas of the walls of the large intestine become inflamed and ulcerated
- The motility of the ulcerated colon is often so great that Mass Movements occur much of the day rather than for the usual 10 to 30 minutes.
- Also, the colon's secretions are greatly enhanced. As a result, the patient has repeated diarrheal bowel movements. (bloody)

Ulcerative colitis

- Unknown etiology , confined to large bowel, auto antibodies or infection triggers inappropriate immune response → destruction of mucosa
- Stress, psycho somatic
- Infective E.coli
- Immunological lymphocytes
- Chronic bloody diarrhea, feces mixed with blood ,mucus and pus

- Proctitis: involves only the rectum (a)
- Proctosigmoiditis: involves the rectum and sigmoid colon (b)
(the lower segment of the colon before the rectum)
- Distal colitis: involves only the left side of the colon (c)
- Pancolitis: involves the entire colon (d)
- Backwash ileitis: involves the distal ileum

هو يعتبر **disease of the distal bowel**، يعني طالما شفته فوق معناها أكيد ال rectum مش سليم يعني



General Disorders of the Gastrointestinal Tract

Vomiting

- Vomiting is due to excessively irritation, overdistension, or even increase excitability of stomach
- The sensory signals : vagal and sympathetic afferent nerve fibers vomiting center.(brain stem)
- Motor impulses that cause the actual vomiting are transmitted from the vomiting center
- To the Upper GIT by way of the 5th, 7th, 9th, 10th, and 12th cranial nerves
- To the Lower GIT through vagal and sympathetic nerves
- To the Diaphragm and abdominal muscles through spinal nerves.

intercostal nerves وال phrenic nerves ذى ال



Antiperistalsis

بتبدأ من ال terminal ileum وال content لل small bowel
duodenum، بتنفضه وبتعمل irritation وال reflex

Occurs often many minutes before vomiting appears.

Antiperistalsis means peristalsis up the digestive tract rather than downward.

Begins in the ileum, and the antiperistalsis wave travels backward up the intestine at a rate of 2 to 3 cm/sec this process can actually push a large share of the lower small intestine contents all the way back to the duodenum and stomach within 3 to 5 minutes. Then, as these upper portions of the GIT, especially the duodenum, become overly distended, this distention becomes the exciting factor that initiates the actual vomiting act.

Vomiting Act

1- The first effects are

- A deep breath,
- Raising of the hyoid bone and larynx to pull the upper esophageal sphincter open.
- Closing of the glottis to prevent vomitus flow into the lung.
- Lifting up the soft palate to close the posterior nares.

2- Next comes a strong downward contraction of the diaphragm along with simultaneous contraction of all the abdominal wall muscles. This squeezes the stomach between the diaphragm and the abdominal muscles, building the intragastric pressure to a high level.

3- Finally, the lower esophageal sphincter relaxes completely, allowing expulsion of the gastric contents upward through the esophagus.

Gastrointestinal Obstruction

Causes

- *Cancer.*
- *Adhesions.*
- *Spasm of a segment of the gut.*
- *Paralysis of a segment of the gut(paralytic ileus).*

If the obstruction occurs at the pylorus:

Affects nutrition; it also causes excessive loss of hydrogen ions from the stomach *(Metabolic*

Alkalosis).

معناها الي هينتقه هيكون من ال stomach، هينتق الحامض
والأكل، معناها هيصير عنده metabolic alkalosis

If the obstruction is beyond the stomach

معناها هينتنق الحامض تبع المعدة والقلوي الي بطلع من ال upper small intestine (يعني من ال acid base balance و ال liver وال small intestine)، فمش هيصير change في ال

- **Loss of large amounts of water and electrolytes.**
- **Antiperistaltic reflux from the small intestine causes intestinal juices to flow backward into the stomach, and these juices are vomited along with the stomach secretions.**
- **little change in acid-base balance occurs.**

Early vomiting, late constipation, colic pain and central distention

If the obstruction is near the distal end of the large intestine

بصير عنده very late vomiting و early constipation

- Feces can accumulate in the colon for a week or more.
- The patient develops an intense feeling of constipation, but at first vomiting is not severe.
- After the large intestine has become completely filled and it finally becomes impossible for additional chyme to move from the small intestine into the large intestine, severe vomiting does then occur.

Early constipation, late vomiting and peripheral distention

Obstruction at pylorus
causes acid vomitus

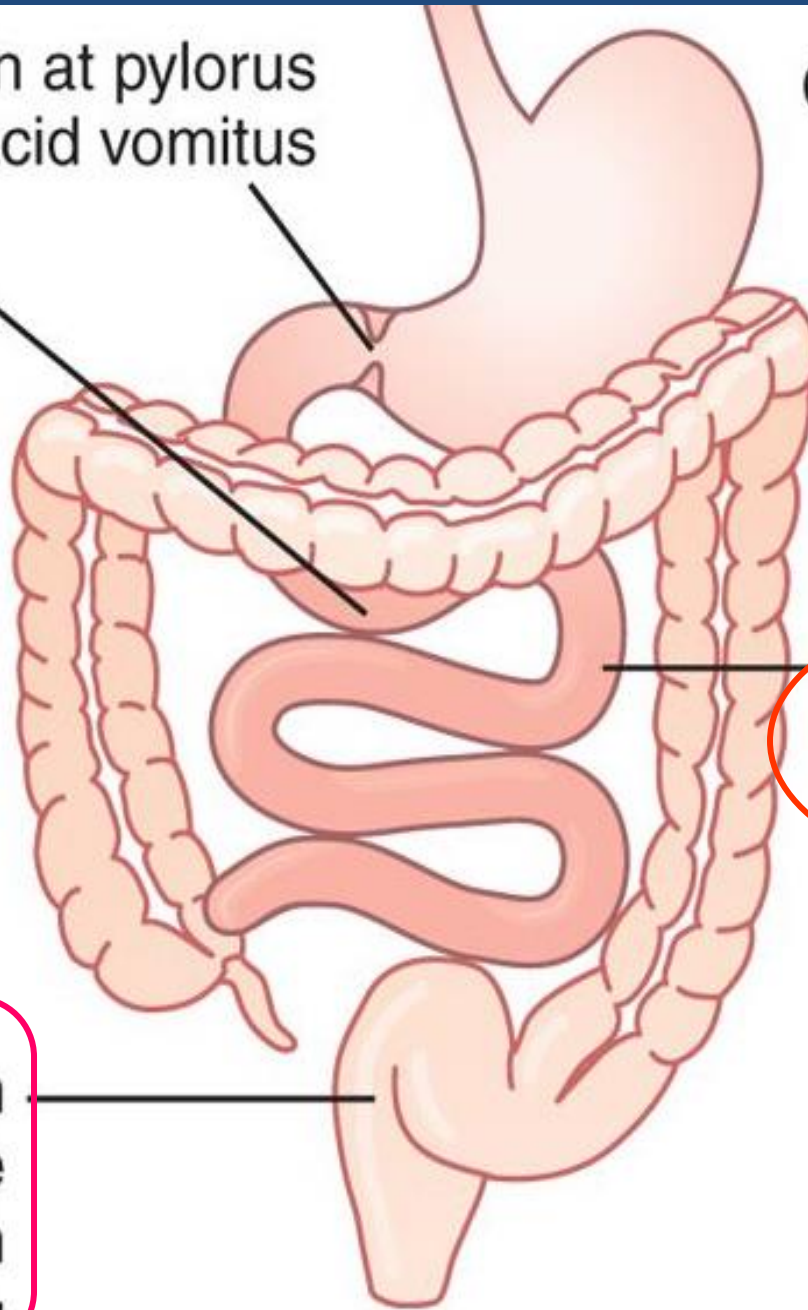
Causes

1. Cancer
2. Ulcer
3. Spasm
4. Paralytic ileus
5. Adhesions

Obstruction below
duodenum causes
neutral or basic
vomitus

High obstruction
causes extreme
vomiting

Low obstruction
causes extreme
constipation with
less vomiting





Flatus(Fart)

Sources of GIT gases

- Swallowed air. عشان هيك العيانيين الي عندهم histus hernia وفتق حجاب حاجز ممكن يكون عندهم abdominal distension
- Gases formed in the gut as a result of bacterial action.
- Gases that diffuse from the blood into the gastrointestinal tract.
- In the large intestine: most of the gases are derived from bacterial action(carbon dioxide, methane, and hydrogen.
- When methane and hydrogen become suitably mixed with oxygen,) **explosive mixture** .

- Beans, Cabbage, Onion, Cauliflower, Corn, and certain irritant foods such as Vinegar.
- Medium for gas-forming bacteria.
- Irritation of the large intestine.

The amount of gases entering or forming in the large intestine each day averages ^{9.5L ج ٲس بٲسٲٲ} 7 to 10 liters, whereas the average amount expelled through the anus is usually only about 0.6 liter. The remainder is normally absorbed into the blood through the intestinal mucosa and expelled through the lungs.

Composition of the Feces

- The feces normally are about three-fourths water and one-fourth solid matter that is composed of
 - About 30 percent *dead bacteria*
 - 10 to 20 percent *fat* .
 - 10 to 20 percent *inorganic matter*
 - 2 to 3 percent *protein*.
 - 30 percent *undigested roughage* from the food and dried constituents of digestive juices, such as bile pigment and sloughed epithelial cells.
- The brown color of feces is caused by **stercobilin and urobilin**, derivatives of bilirubin.
- The odor is caused principally by products of bacterial action include indole, skatole, mercaptans, and hydrogen sulfide. ذی ریحة البيض الخربان

صلِّ على النبي

خلصنا

يلا خدك بريك باقي اليوم 😄