

Small and Large Intestinal pathology, part 1

DR. OMAR HAMDAN

GASTROINTESTINAL AND LIVER PATHOLOGIST
MUTAH UNIVERSITY

SCHOOL OF MEDICINE-PATHOLOGY DEPARTMENT
UNDERGRADUATE LECTURES 2025



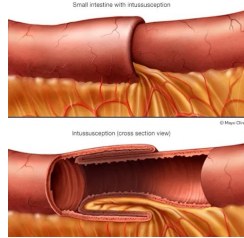
Diseases of the intestines

- ✓▶ Intestinal obstruction
- ▶ Vascular disorders
- ▶ Malabsorptive diseases and infections
- ▶ Inflammatory bowel disease.
- ▶ Polyps and neoplastic diseases

Intestinal obstruction

▶ Mechanical obstruction:

✓ ▶ Intussusception

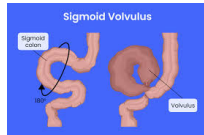


▶ Hernias.

بعد العمليات

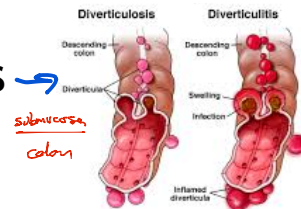
▶ Adhesions.

▶ Volvulus →



▶ Tumors.

▶ Diverticulitis →



▶ Infarction

▶ Non-mechanical obstruction

✓ ▶ Hirschsprung disease

▶ Neurological disorders.

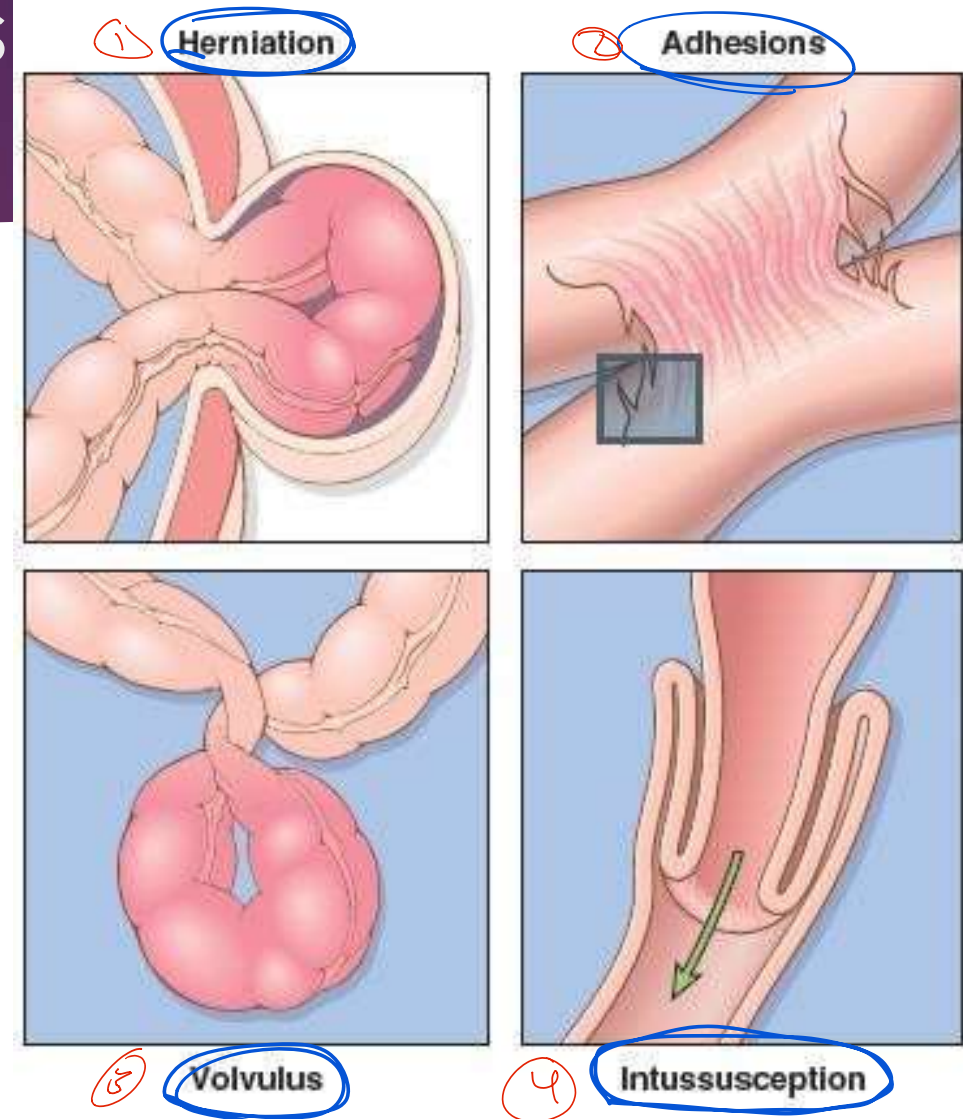
▶ Drugs....etc

Clinical picture of intestinal obstruction.

- ▶ Abdominal pain
- ▶ Distention *gas inside lumen / bacteria
gas clear
stool*
- ▶ Vomiting
- ▶ Constipation.

- ▶ Acute or chronic.

80% of mechanical obstructions



Intussusception

- ▶ Segment of the intestine constricted by a wave of peristalsis, telescopes into the immediately distal segment.
- ▶ Once trapped, invaginated segment is propelled by peristalsis, and pulls mesentery with it.
- ▶ **Most common cause of intestinal obstruction in children younger than 2 years of age.** *pain constipation irritability crying*
- ▶ Untreated progresses to infarction.

*proximal in distal part
telescopes*

دور الطيات

*2 ft. ileocecal valve lies near **

Causes of intussusception

- ▶ < 2 years : Idiopathic in most cases. viral infection
- ▶ Peyer patches hyperplasia (rotavirus vaccine, viral infections)
- ▶ Meckles diverticulum (ileum) peptic ulcer ectopic gastric tissue → HCl ↑ acidity ↑
ulcer
- ▶ Old children & adults: Intraluminal mass or tumors 10-15 y.

Clinical features:

- ▶ Abdominal swelling
- ▶ Vomiting
- ▶ Passing stools mixed with blood and mucus (currant jelly stool)
- ▶ Pain. *child. irritable due to pain* *حرقان في البطن ⇒ red currant jelly stool*

Management

surgery * محاولة علاجها لا ينجح * barium enema

- ▶ Contrast enemas in uncomplicated idiopathic cases. diagnostic + therapeutic
- ▶ Surgery if complicated or if masses are the leading point.

Non mechanical.

Hirschsprung Disease

rectum

- ▶ Congenital defect in colonic innervations
- ▶ Congenital aganglionic megacolon post name
- ▶ More common in males dilatation
- ▶ More severe in females
- ▶ Risk increase in siblings.
- ▶ **Typical presentation:**
 - artificial stool or infant.
- ▶ Neonatal failure to pass meconium
- ▶ Obstructive constipation.

Pathogenesis

- ▶ During embryogenesis

Disrupted migration of neural crest cells from cecum to rectum.
Handwritten: red arrow from cecum to rectum

- ▶ Lack of Meissner submucosal plexus and the Auerbach myenteric plexus.
Handwritten: Bow thickness looks like from rectum not cecum.

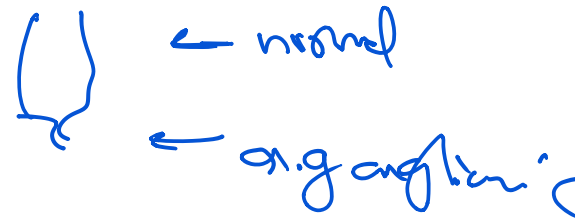
- ▶ Failure of coordinated peristaltic contractions.

- ▶ Mutations in RET: in familial cases and 15% of sporadic

- ▶ Other genes and environmental factors play role.

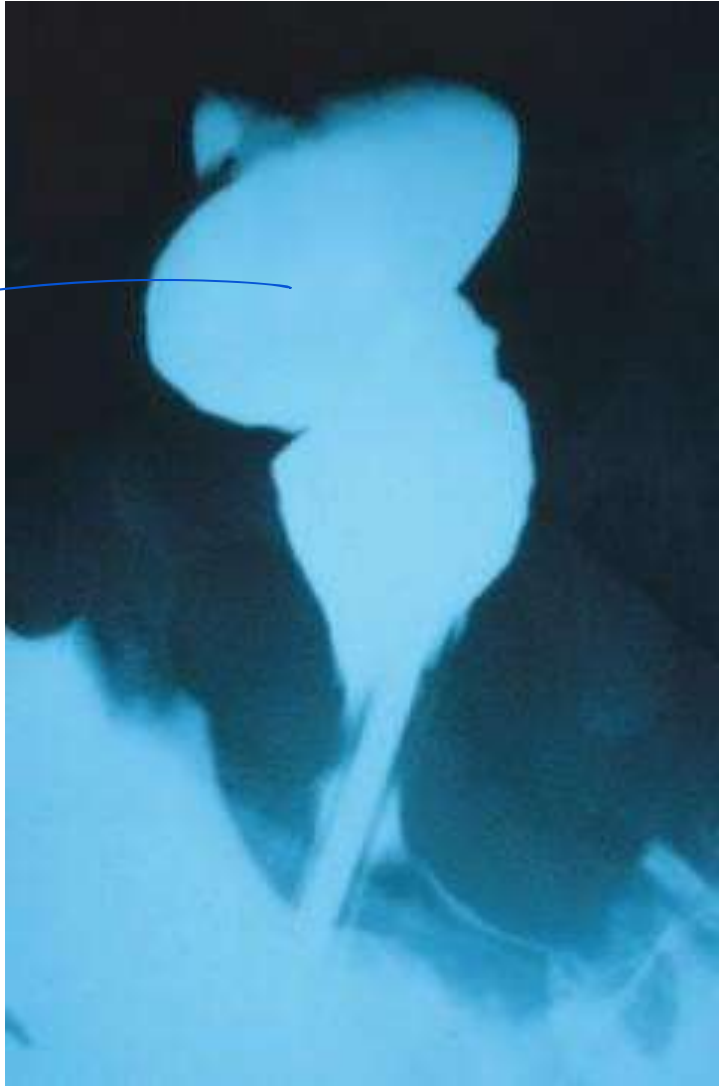
Morphology

- ▶ Rectum always involved.
- ▶ Extent is variable.
- ▶ Most cases in rectosigmoid.
- ▶ Macroscopic ^{contraction.} distal.
- ▶ Aganglionic region normal or contracted
- ▶ Proximal normal segment progressively dilated.
- ▶ Diagnostic workup: barium enema and BIOPSY.



المشاكل عادة
diagnostic only
usually

normal



normal

mega

colon

gas -

infection

Enterocolitis *

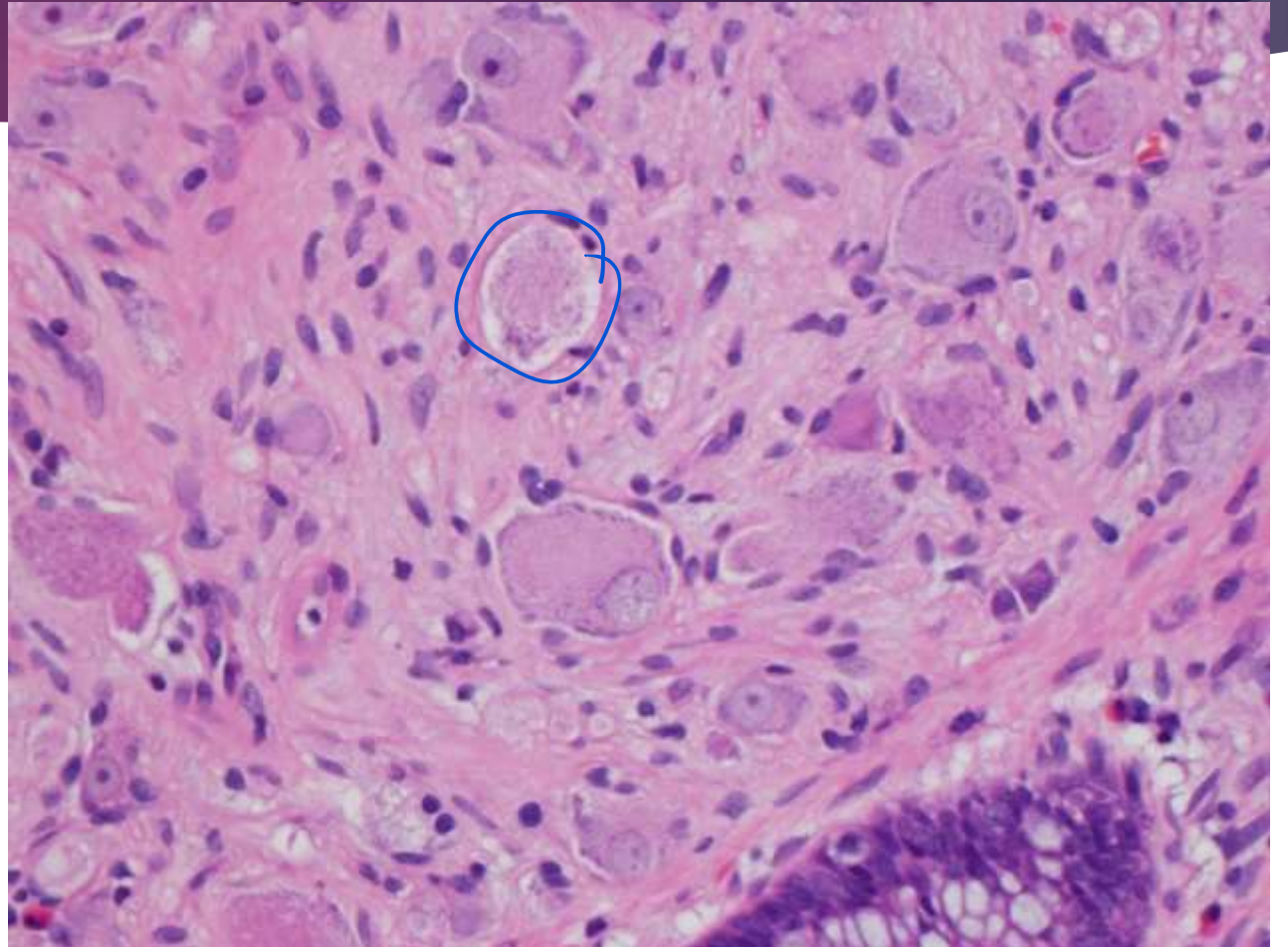
complication

ganglion cells

بجوار خلايا
submucosa + myotric

الغشاء المخاطي

normal



Complications

inflammation of both S.+ colon.

- ▶ Enterocolitis
- ▶ Fluid and electrolyte disturbances *dehydration.*
- ▶ Perforation
- ▶ Peritonitis

▶ Treatment:

- ▶ Surgical resection of aganglionic segment and anastomosis of normal segments.



VASCULAR DISORDERS OF BOWEL

- ▶ Ischemic Bowel Disease *elderly / less vascularity (hepatic flexor)*
- ▶ Hemorrhoids *with other disease.*

Hemorrhoids

- ▶ Dilated anal and perianal collateral vessels that connect the portal and caval venous systems.

portocaval shunt

Predisposing factors:

- ▶ Constipation and straining
- ▶ Venous stasis of pregnancy, *pressure*
- ▶ Portal hypertension.

- ▶ External and internal hemorrhoids

above dentate line

► Thin -walled, dilated, submucosal vessels beneath anal or rectal mucosa.

► Symptoms: Bleeding, pain, thrombosis and inflammation

not mixed with
stool, fresh blood

complicated

surgery in complicati.

DIARRHEAL DISEASE

- ▶ Diarrhea: increase in stool mass, frequency or fluidity.
- ▶ Dysentery: painful, bloody, small volume diarrhea.

- ▶ **Malabsorptive Diarrhea**

Pancreatic insufficiency.

Celiac disease

Crohn disease

Cystic Fibrosis

Lactase (Disaccharidase) Deficiency

Abetalipoproteinemia

- ▶ **Infectious Enterocolitis**
- ▶ **Inflammatory bowel diseases.....**

Malabsorptive Diarrhea

- ▶ Chronic.
- ▶ Defective absorption of fats, fat- and water-soluble vitamins, proteins, carbohydrates, electrolytes, minerals and water
- ▶ Hallmark is : steatorrhea.

abnormal quantity of
fat in stool.
+ Vitamins
yellow - clay

Malabsorptive diarrhea

Defect in one of the following:

- ▶ Intraluminal digestion. *enzymes , gastric juice.*
- ▶ Terminal digestion.
- ▶ Transepithelial transport. *ما ي امتصاص*
- ▶ Lymphatic transport.
*الدهون ما ينتقل من الأمعاء إلى الدم
عني اللف سود أو متاثر*

Manifestations:

- ▶ Weight loss, anorexia, *loss of appetite*
- abdominal* ▶ Flatus, abdominal distention, *gases*
- ▶ Borborygmi, Muscle wasting
- ▶ Anemia and mucositis (iron, pyridoxine (VB6), folate, or vitamin B12 deficiency)
- ▶ Bleeding (vitamin K deficiency)
- ▶ Osteopenia and tetany (calcium, magnesium, or vitamin D deficiency)
- ▶ Neuropathy (vitamin A or B12 deficiency)
- ▶ Skin and endocrine disorders.

Iodine → thyroid

Cystic Fibrosis

- ▶ Mutations in cystic fibrosis transmembrane conductance regulator (CFTR)
- ▶ Defects in ion transport across intestinal and pancreatic epithelium.
- ▶ Thick viscous secretions. (New) water in ileum → diarrhea
- ▶ Mucus plugs in pancreatic ducts >>> pancreatic insufficiency (80% of patients).
- ▶ Defect in intraluminal digestion.

Celiac Disease

مرض القمح

- ▶ Gluten sensitive enteropathy
- ▶ Immune mediated enteropathy Ab → intestine (Dudenum) 2 age ← children. adult.
- ▶ Wheat, rye or barley.
- ▶ Genetically predisposition, HLA-DQ2 or HLA-DQ8. normal
- ▶ Treatment: gluten free diet. APC ك لا يكون موجود. HLA DQ 8.
- ▶ Association with: type 1 diabetes, thyroiditis, and Sjogren syndrome
Autoimmune diseases

Pathogenesis

- ▶ Gluten >>> gliadin >>> react with HLA-DQ2 or HLA-DQ8 on antigen-presenting cells >>> CD4+ T cells activation >>> cytokines >>> tissue damage.

- ▶ Serology:

① Anti- tissue transglutaminase antibodies *

② Anti-gliadin antibodies *

③ Anti -endomysial antibodies

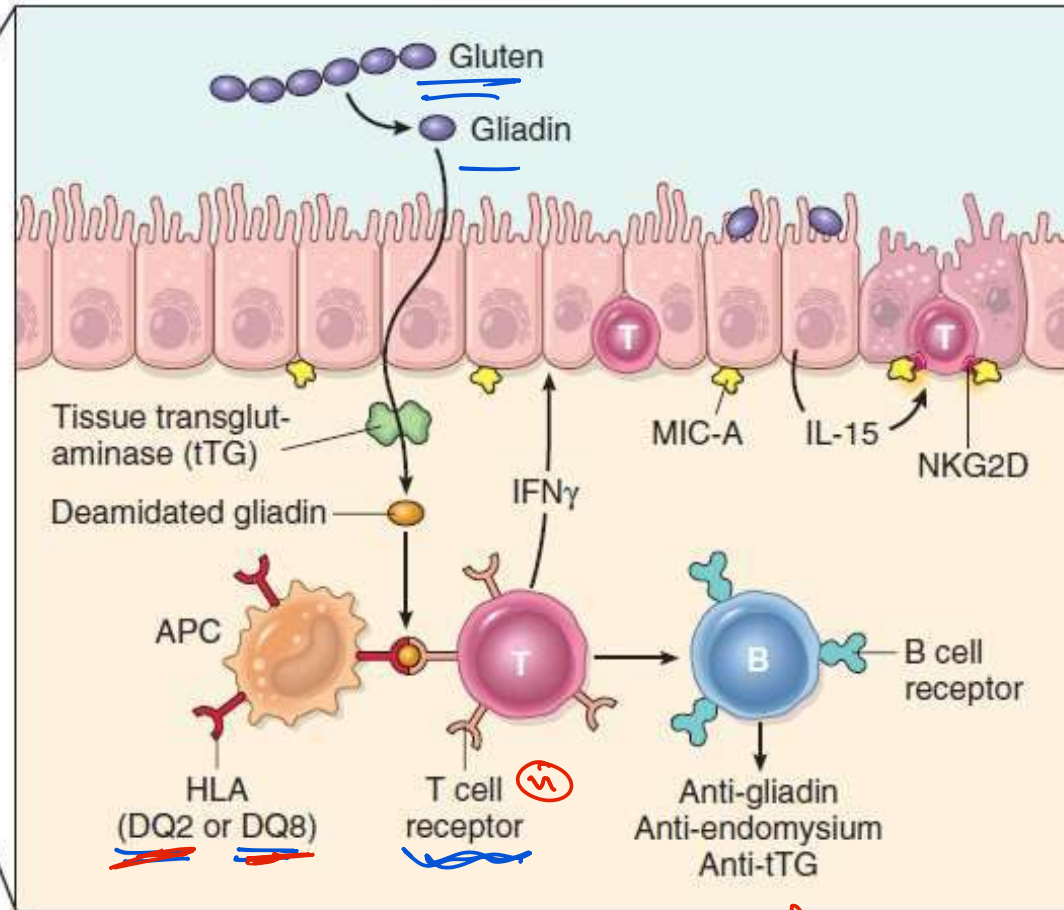
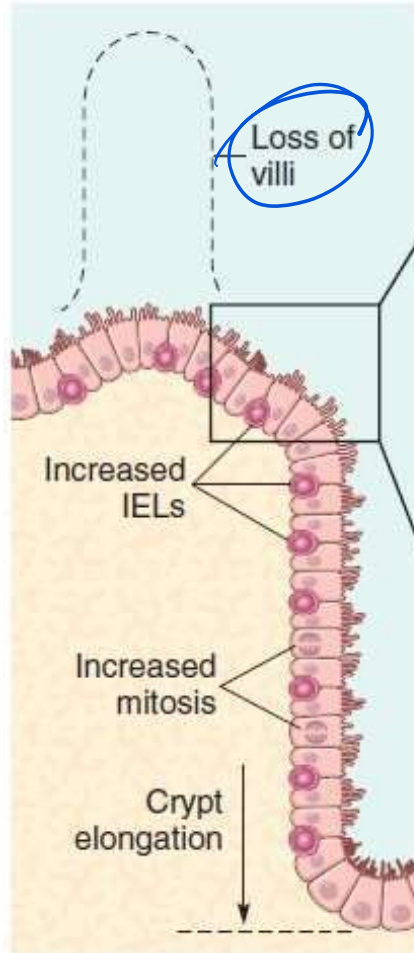
sensitive

* not specific

malabsorption: - diarrhea

-
-
-

non classic
consumption.



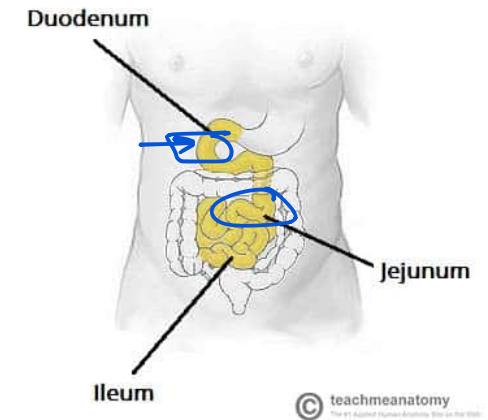
التهاب هون
epitholun

CD4 inside lymphocytes → CD8+

MORPHOLOGY

acid stomach in left

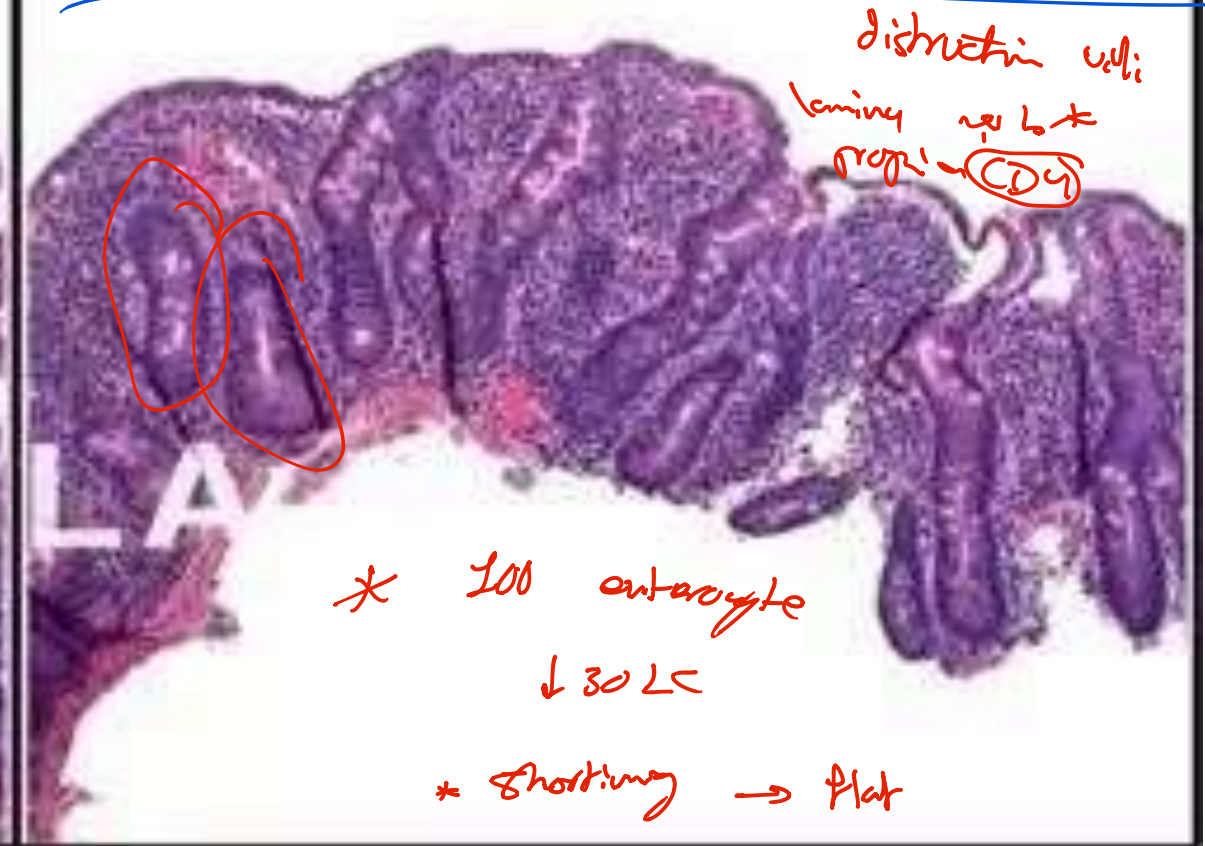
- ▶ Second portion of the duodenum or proximal jejunum.
- ▶ Triad: intraepithelial lymphocytosis (CD8+ T cells), crypt hyperplasia, and villous atrophy.
IEL villi
- ▶ Lamina propria: lymphocytes, plasma cells, eosinophils.....
so not pathogenic
- ▶ IEL & villous atrophy are not pathognomonic, seen in viral enteritis.
- ▶ Diagnosis: Clinical, histologic and serologic correlation.



Normal



Celiac Disease



atrophy.

crypt hyperplasia

Clinical Features

مباكل اقل!

- ▶ Children 6-24 months : classical or non classical symptoms
- ▶ Classical: Irritability, abdominal distention, anorexia, diarrhea, failure to thrive, weight loss, or muscle wasting
- ▶ Non-classical: abdominal pain, nausea, vomiting, bloating, or constipation.
- ▶ Blistering skin lesion, dermatitis herpetiformis, in 10% of Pnts.

normal diarrhea

Dermatitis herpetiformis.



- ▶ Adults (30-60 years)
- ▶ Anemia: iron deficiency
- ▶ B12 and folate deficiency: less common.
- ▶ Diarrhea , bloating, and fatigue.
- ▶ Missed diagnosis: Silent celiac or latent celiac.
no symptom + serology but biopsy normal.
- ▶ Increased risk of enteropathy associated T cell lymphoma & Small intestinal adenocarcinoma
*also 60-70 y
gluten
symptoms*

Diagnosis:

1. Non invasive serologic tests:

► Most sensitive:

Anti tissue transglutaminase antibody, IgA *

Anti deamidated gliadin antibodies, IgA & IgG *

► Most specific, but less sensitive

Antiendomysial antibody.

normal after

3 months

serology.

6 months

biopsy

2. Invasive tests: small bowel biopsy.

Lactase (Disaccharidase) Deficiency

- ▶ Osmotic diarrhea *no digestion*
- ▶ Lactose remains in the gut lumen.
- ▶ Lactase found at apical brush border membrane *normal*
- ▶ Normal biopsy findings.
- ▶ Two types:

Congenital : AR, genetic mutation, rare, explosive diarrhea, watery, frothy stools & abdominal distention, after milk ingestion

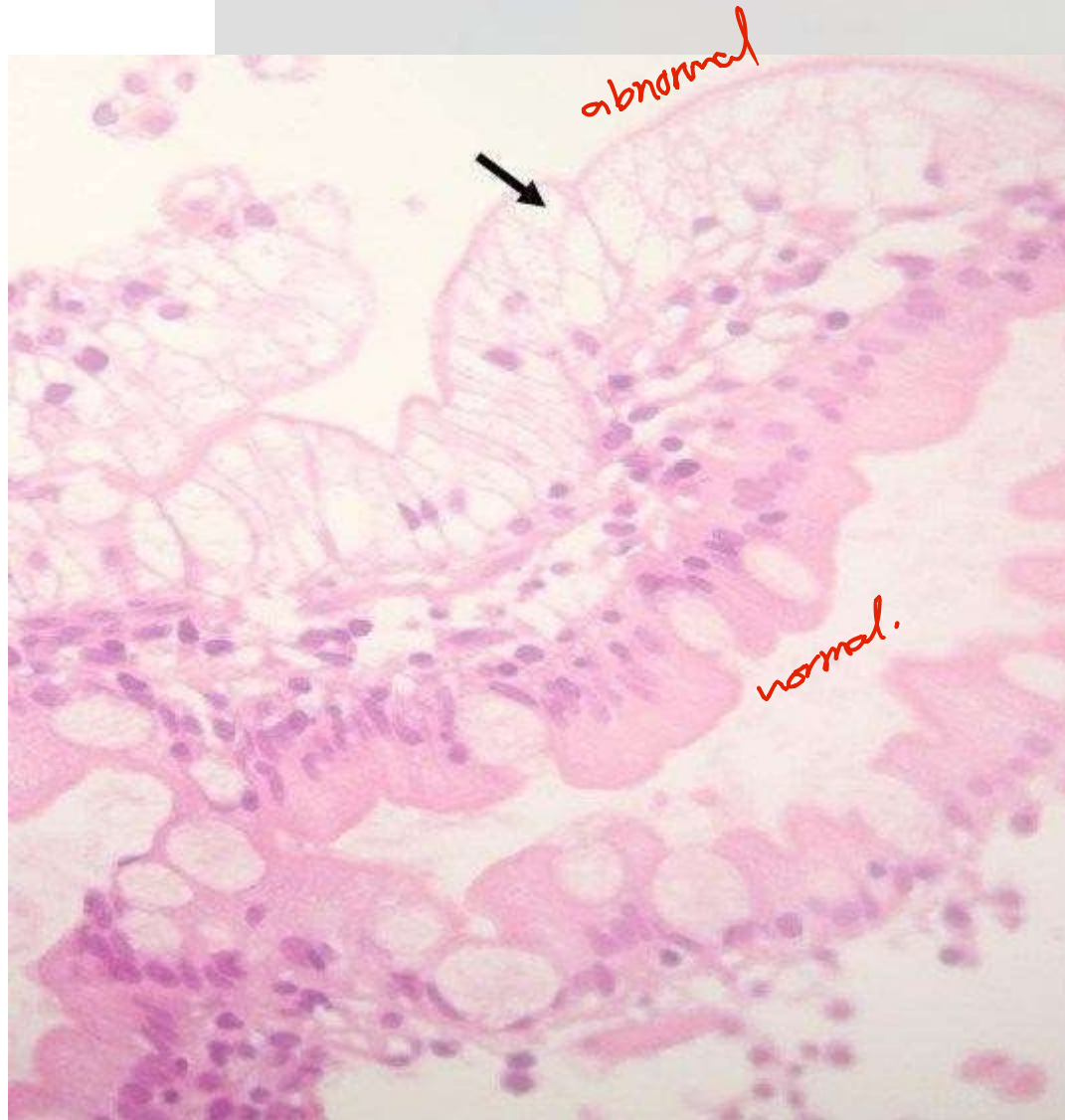
Acquired : follow viral or bacterial enteritis, after childhood.

most common

Stop milk and its derivatives.

Abetalipoproteinemia

- ▶ Autosomal recessive, rare.
- ▶ Infants w/ failure to thrive, diarrhea, and steatorrhea
- ▶ Lack of absorption of fat and fat soluble vitamins
V. K B12
- ▶ Inability to synthesize triglyceride-rich lipoproteins.
- ▶ Transepithelial transport defect of TG and FAs.
- ▶ Monoglycerides and triglycerides accumulate in epithelial cells.
villi



Micrograph showing
enterocytes with a
clear cytoplasm (due to
lipid accumulation)
characteristic of
abetalipoproteinemia.



Micrograph showing enterocytes with a clear cytoplasm (due to lipid accumulation) characteristic of abetalipoproteinemia.