Lecture 4:

Malabsorption

Done by: Othman Abid

Team leaders:
Abdulrahman Al-Thaqib & Maha Alzeheary

Objectives

Upon completion of this lecture the students will:

I. Understand that the malabsorption is caused by either abnormal digestion or small intestinal mucosa.

II. Know that Malabsorption can affect many organ systems (alimentary tract, hematopoietic system, musculoskeletal system, endocrine system, epidermis, nervous system(

III. Concentrate on celiac disease and lactose intolerance as two examples of malabsoption syndrome.

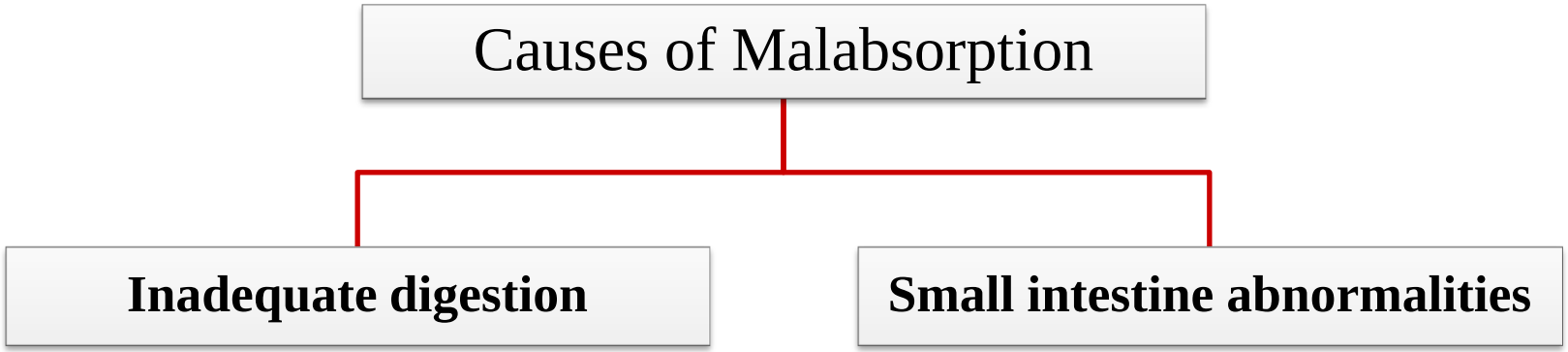
Contact us:
Pathology433@gmail.com
@pathology433

Celiac Disease in 5 minutes

Milk Allergy vs. Lactose Intolerance

Malabsorption syndrome:

Inability of the intestine to absorb nutrients adequately into the bloodstream.



Malabsorption that is caused by **Inadequate digestion** may occur after a problem happened to the **Pancreas** (Cystic Fibrosis, Pancreatitis…) or the **Stomach** (Postgasterectomy) or the **Bile** (Obstructive jaundice…).

Malabsorption that is caused by **Small intestine abnormalities** may occur after a problem happened to the **Mucosa** (Celiac disease, Giardiasis…) or **Inadequate small intestine** (Intestinal resection, Crohn's disease) or **Lymphatic obstruction** (Malignant lymphoma…).

Clinical features:-

The most important clinical feature that we find in Malabsorption patients is **Steatorrhea** (Fat in stool), also the patients will suffer from **weight loss** and **growth retardation in children**. Upon all of these clinical features, there will be some minerals and vitamins loss, so the patients will suffer from various complications related to the loss:

Protein	• Swelling or Edema
Vitamin B12, Folic acid	• **Iron deficiency anemia**
Vitamin D, Ca	• Osteopenia and Osteoporosis.
Vitamin K	• **Bleeding**

Diagnosis:-

There is no specific test for Malabsorption, but the investigation is guided by symptoms and signs. We use **Stool test** to investigate for **Steatorrhea specifically**, **Blood tests**, and **Endoscopy**.

Celiac disease:

An immune reaction to **Gliaden** (a fraction of the protein Gluten). It's usually diagnosed in childhood or mid adult. It's highly associated with class II HLA DQ2.
- Example of food contain gluten (Wheat قمح, barley شعير, flour دقيق)

Typical presentations:

Infants → GI symptoms, and failure to thrive.
Children → GI symptoms & inadequate rate of weight gain.
Young adults → **Anemia** (Most common presentation)
Adults & Elders → GI symptoms.

Histology:

Mucosa is flattened and marked villous atrophy, with increased **intraepithelial lymphocytosis**.

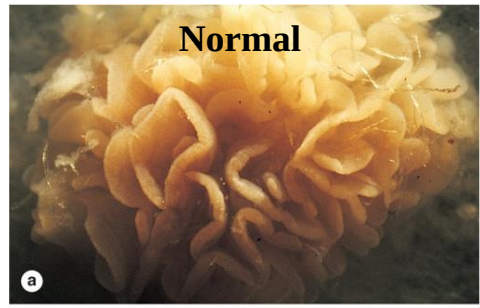
How to diagnose CD?

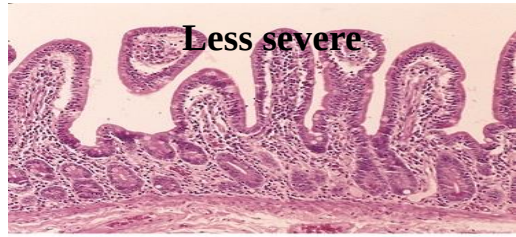
First of all, we'll look for **Steatorrhea**, and if we took biopsy of the Small intestine, we'll find **villous atrophy**.

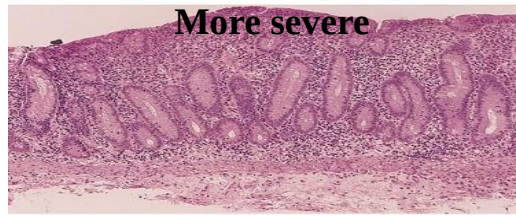
Complications of CD:

1- Osteopenia or Osteoporosis.
2- Infertility in women.
3- Small intestine lymphoma.
4- Iron deficiency anemia.

The treatment of Celiac disease is by avoiding any food that contain Gluten in it, also we can use that as a tool of diagnosis.







Lactose intolerance: Low or absent activity of the enzyme lactase

Lactase deficiency is of two types:

1- **Inherited**: **Childhood onset, and adult onset lactase deficiency**, genetically programmed loss of activity of small intestinal enzyme **Lactase**

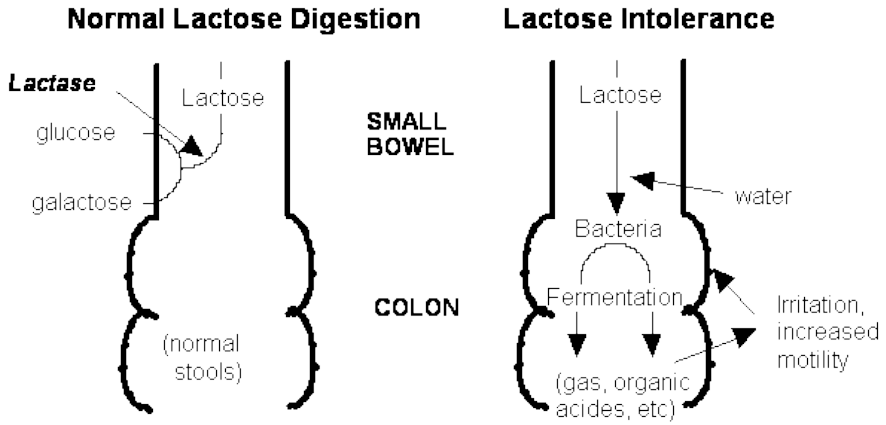
2- **Acquired**: Secondary lactose deficiency due to intestinal mucosal injury by an infectious, allergic and inflammatory process.

Clinical features:

Bloating, **abdominal discomfort** and **flatulence**. (a few hours after ingestion of milk products)

How to diagnose Lactose intolerance?

We use **Hydrogen breath test**: the patient will exhale excess amount of H_2 after lactose ingestion, and that lead us to lactose malabsorption.



SUMMARY

Malabsorptive Diarrhea

- *Celiac disease* is an immune-mediated enteropathy triggered by the ingestion of gluten-containing grains. The malabsorptive diarrhea in celiac disease is due to *loss of brush border surface area* and, possibly, deficient enterocyte maturation as a result of immune-mediated epithelial damage.
- *Lactase deficiency* causes an *osmotic diarrhea* owing to the inability to break down or absorb lactose.
- *Irritable bowel syndrome* (IBS) is characterized by chronic, relapsing abdominal pain, bloating, and changes in bowel habits. The pathogenesis is poorly defined.
- The two forms of microscopic colitis, *collagenous colitis* and *lymphocytic colitis,* both cause chronic watery diarrhea. The intestines are grossly normal, and the diseases are identified by their characteristic histologic features.