Pathology

Sheet Slide

number 7

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Last time we stopped at Crohn's diseases, we talked about its mechanism, and about its molecular biology along with ulcerative colitis.

We said that they share their molecular biology but the difference between them is the site of presentation.

Site of presentation of Crohn's disease:

Typically, the site of presentation of Crohn's diseases is in the small intestine, more specifically in the terminal ileum, ileocecal valve and cecum.

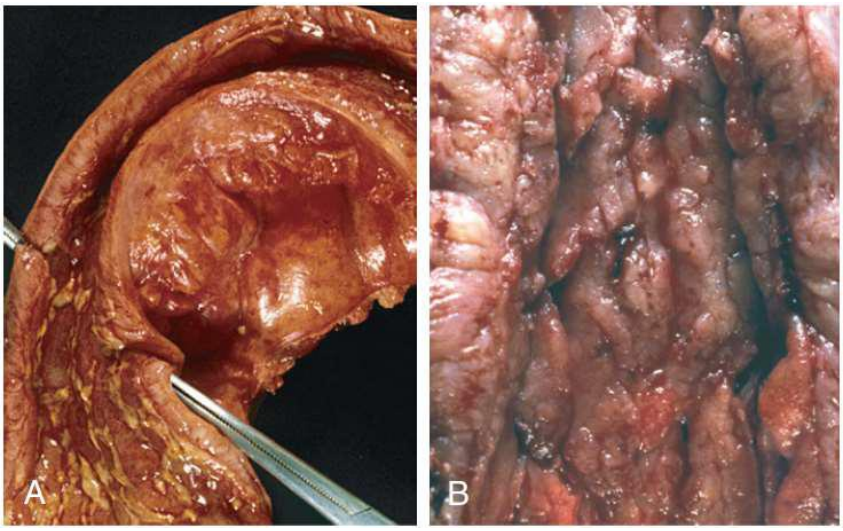
This means that a presentation of malabsorption is going to be more common in Crohn's diseases since it is found in the small intestine where most absorption occurs.

Note: in ulcerative colitis, there is no malabsorption usually since its found in the colon where only water is absorbed.

Appearance of Crohn's disease:

When you look at Crohn's diseases the involvement is going to be PATCHY and we have many skip lesions that are a result of multiple, separate and sharply delineated areas (it is not continuous).

The first thing you will see if you're doing a colonoscopy is the **Aphthous ulcer** which is a deep ulcer that involves all layers, multiple ulcers may form one big ulcer called the **Serpentine ulcer**, because these ulcers involve the entire thickness this means that the inflammation will result in stricture formation (fibrosis), this will cause a narrowing of the lumen which may cause an obstruction.

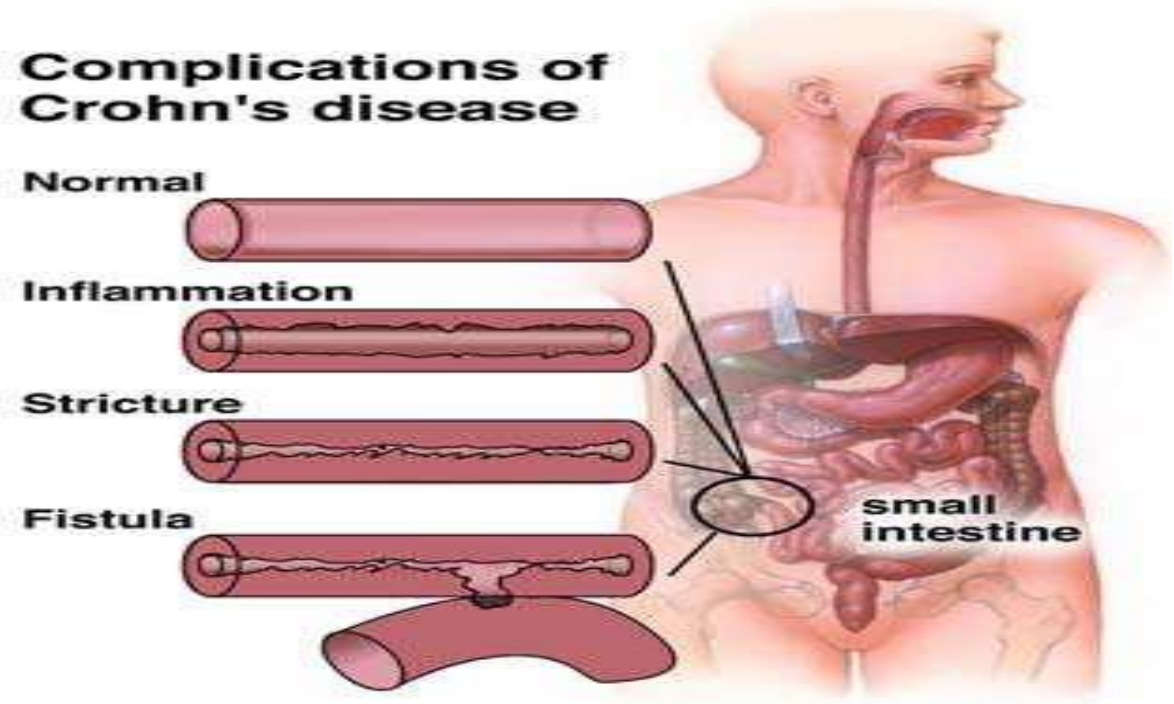


As ulcers are deep they may also cause **external ulceration** and **perforation** which may cause **peritonitis** and **fistulas.**

What are fistula's:

Fistula is like a hole between an intestine and another intestine or between intestine and bladder or vaginal canal, also it may end up with renal fistula's which is characteristic for Crohn's and not found in ulcerative colitis.

Have a look at this picture for more details:



The main problems of Crohn's are fissures, perforation, and fistula's, but if the inflammation is severe involving all the layers, we may end up with neural thickening as a compensatory mechanism which is called **creeping fat**.

So, what are the causes of wall thickening:

1. inflammation

2. edema caused by inflammation

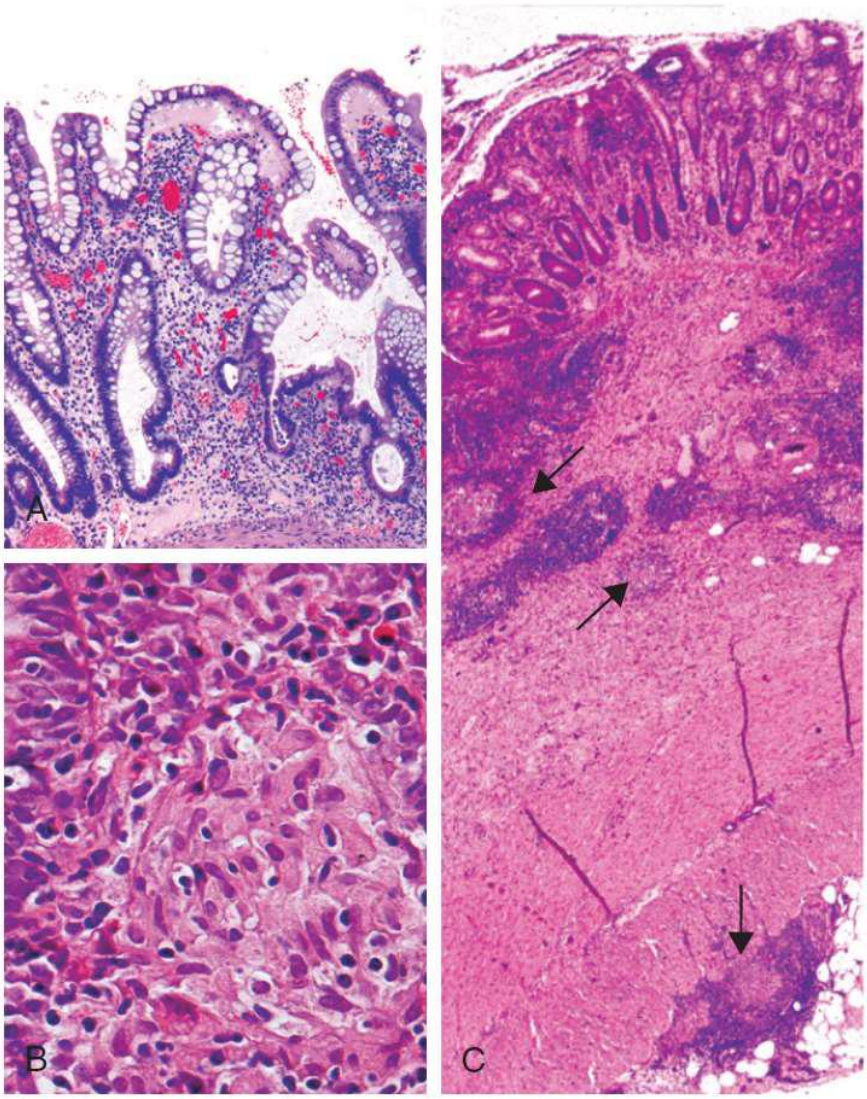
3. fibrosis

4. HYPERTROPHY of the muscularis layer

Appearance under the microscope:

You are going to see neutrophils that are going to be more deep than in ulcerative colitis since the inflammation in Crohn's is deeper, when the neutrophils are at the bottom of the crypt this is called the crypt abscess , the more neutrophils there are, the more severe the inflammation is, also because you have cycles of destruction and repair and destruction and repair and destruction and repair , the crypts are going to start

acting crazy, this is because they will start to hyper proliferate trying to fix the damage and will frequently branch forming bizarre shapes, and you will see non caseating granulomas.



Multiple non caseating granulomas in the mucosa and submucosa is a HALLMARK of Crohn's disease, however the absence of noncaseating granulomas does not mean we don't have Crohn's disease, but their presence does exclude ulcerative colitis in diagnosis.

0:00 – 9:43

In Crohn's disease you are worried about stricture and fistula formation, these are only fixed by surgical resection but the problem is that in the

vast majority of patients this problem will reoccur again, so we will frequently require resurgery.

Extra intestinal manifestations:

The intestinal manifestations are not the only problematic manifestations in Crohn's diseases and ulcerative colitis, external manifestations are also a big problem, external manifestations of Crohn's include: **uveitis, migratory polyarthritis, sacrolitis, ankylosing spondylitis, erythema nodosum and clubbing of the finger tips.**

Note: the doctor did not say whether we should memorize them or not.

What is clubbing of fingertips?

When you put the nails of your second fingers on top of each other, a small diamond shape will appear, if you don't find the diamond this means you have clubbed nails. CONGRATULATIONS!

What is erythema nodosum?

It is a superficial inflammation of the lower legs and is nodular in appearance.

These extra intestinal manifestations including pericholangitis and primary sclerosing cholangitis are found more frequently in ulcerative colitis but are also found in Crohn's.

These extra intestinal manifestations may be the first presenting symptoms in mild cases, intestinal manifestations include diarrhea or bloody diarrhea but not a medical emergency, and the person might have the disease but not feel intestinal manifestations.

Triggers of Crohn's disease:

1. Psychological stress

2. smoking

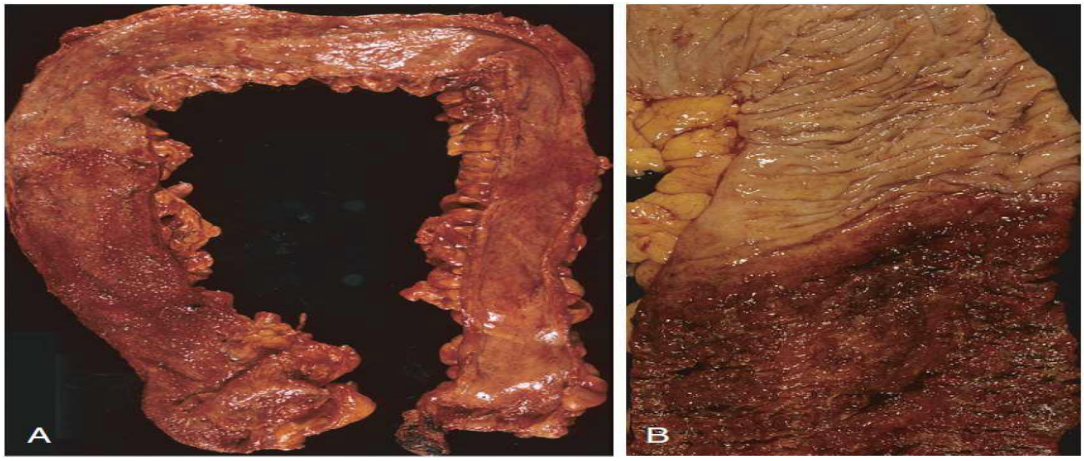
3. previous inflammation

When the patients do manifest with these attacks of mild diarrhea and abdominal pain, the pain will be in the lower right quadrant because the most common site is the ileocecal region, the symptoms may be like those of appendicitis but the difference in Crohn's is that the symptoms are intermittent.

Ulcerative colitis:

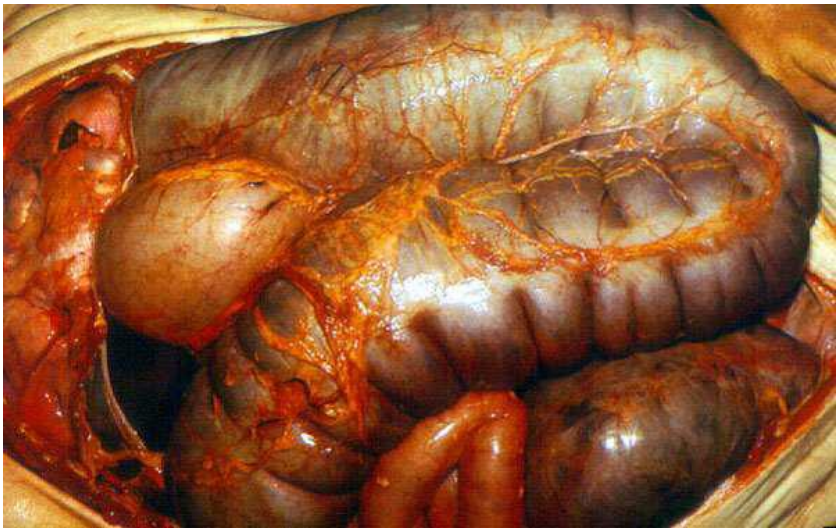
As for ulcerative colitis, it mostly affects the colon and can go all the way to the ileac region, the ileum may be involved with severe colitis if the whole colon was involved, malabsorption is not seen in ulcerative colitis, also we will not find skip lesions in ulcerative colitis (UC), the inflamed area is continuous and the inflammation is superficial, the inflammation does not involve the entire surface area, we may have regions that are trying to repair inflammation, the epithelial cells in these regions are hyperproliferating and are trying to compensate, this is will cause them to appear as if they are raised above the general surface area, they are surrounded by broad based ulcers, shallow ulcers that are wide so they will appear as if they are polyps but they are not, they are called pseudopolyps, if the entire colon in involved this is called pancolitis.

So, in early stages we will have pseudopolyps but if the disease continues for long enough these polyps will be replaced by atrophic mucosa, it looks like a very flat, red, granular angry looking surface with no pseudopolyps, this is a sign that the diseases has continued for a long time.



If you find crypt abscess in ulcerative colitis, they will be more superficial but you will not find fistula in UC, also the crypt abscess in UC may affect the submucosal nerve layer causing paralysis of the colon, with no peristalsis and inflammation we will have what is called TOXIC MEGA COLON

This may cause the colon to perforate and is a medical emergency



Under the microscope UC looks like Crohn's but
is more superficial and has no granuloma, same as Crohn's UC has many extra intestinal manifestations.

How to treat a patient with ulcerative colitis?

Since there are no skip lesions in the UC we can just do a colectomy and remove the inflamed part, we can even remove the whole colon, but the extra intestinal manifestations are going to persist, we don't know why.

The triggers of UC unlike Crohn's are not well known, but one trigger is known which is smoking cessation (stop smoking).

Major differences between UC and Crohn's:

Refer to last 2 slides please.

Note: in Crohn's there is a risk of metaplasia in the intestine.

-Anemia may happen in UC because there is high blood loss, more blood is lost in UC than in Crohn's disease.

-In UC the fear is not from diarrhea nor from the extra intestinal manifestations but from **colitis-associated neoplasia.**

How does it happen?

The inflammation will cause form free radicals which will cause genetic mutations leading to oncogene activation or tumor suppressor genes deactivation leading to cancer.

The severity and time of the inflammation will increase the risk of neoplasm and patients with primary sclerosis cholangitis have a higher risk.

If we do an endoscopy to a patient with UC and find a high-grade dysplasia (especially multi-focal hyper dysplasia) in one location, there is a high risk that a neoplasm has formed somewhere else and the patient will require colectomy.

The end