

The Year in Review Series: Case 2. Anemia
Case-based NBME review



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Tutorial Services

Patient is referred for video capsule endoscopy. Aphthae are observed.
Which of the following was the most likely indication for the study?



9 Mid-Jejunum



12 Proximal Ileum

1. HCT 30%, MCV 72, low iron, low iron binding capacity
2. HCT 30%, MCV 105, low B-12, (+) intrinsic factor antibodies
3. HCT 30%, MCV 72, low iron, high iron binding capacity
4. HCT 30%, MCV 82, elevated indirect bilirubin

A biopsy is taken in the region of the aphthous lesion.
Which of the following is most likely to be described?



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1. Crypt abscess with neutrophilic infiltrate
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3. Thin walled vessel lined by epithelium and little smooth muscle
4. Poorly differentiated cells with few glands
5. Tubular adenoma with evidence of DNA mismatch repair

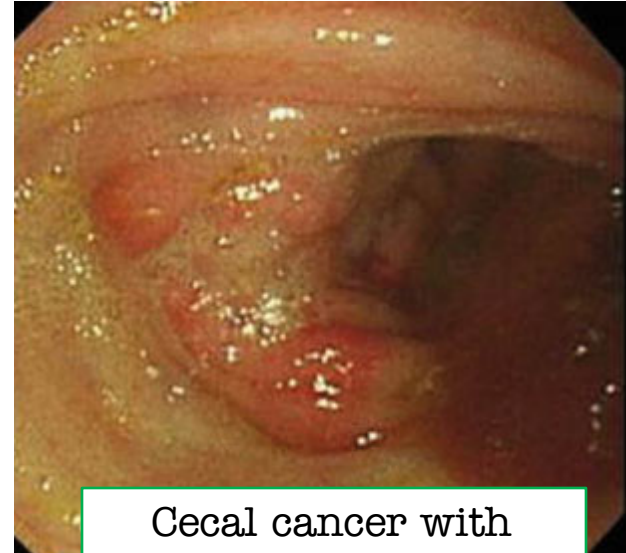
The biopsy reveals the presence of granulomas.
Which of the following epiphenomenon is the patient most likely to experience?



A



B



Cecal cancer with
early APC mutation

C



Cholangiogram

D

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Video Capsule Endoscopy, Indication:
GI blood loss of unclear origin

1. HCT 30%, MCV 72, low iron, low iron binding capacity
2. HCT 30%, MCV 105, low B-12, (+) intrinsic factor antibodies
3. HCT 30%, MCV 72, low iron, high iron binding capacity
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Case 2: Another instance where you don't need the graphic to answer the question

Patient is referred for video capsule endoscopy. Aphthae are observed.
Which of the following was the most likely indication for the study?

So which of the choices are consistent with GI blood loss?

1. HCT 30%, MCV 72, low iron, low iron binding capacity
2. HCT 30%, MCV 105, low B-12, (+) intrinsic factor antibodies
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Low MCV (Microcytosis):

Iron deficiency anemia

Anemia of chronic disease

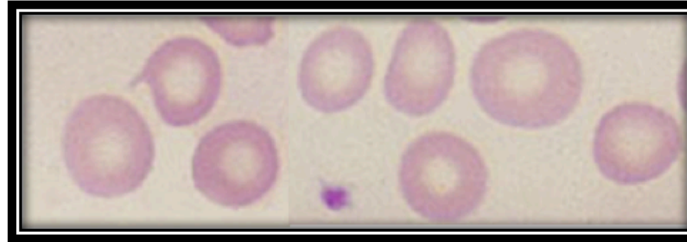
Thalassemia

(Sideroblastic anemia)

Microcytic Anemia: Iron Deficiency (IDA) and ACD*

IDA: iron deficiency anemia

*ACD: anemia of chronic disease



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Low MCV (Microcytosis):

Iron deficiency anemia
Anemia of chronic disease
Thalassemia
(Sideroblastic anemia)

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So which of the choices are consistent with GI blood loss?

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IDA:

Iron loss (GI/GYN)
Nutrition/Absorption (e.g. Celiac disease)

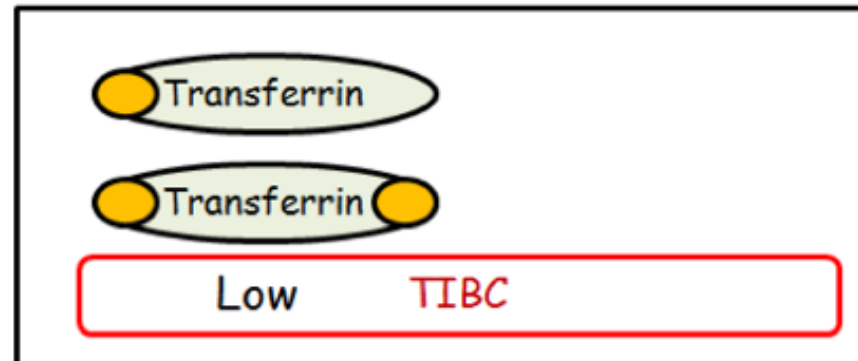
ACD:

IL-6 release (\uparrow Hepcidin; \downarrow EPO)

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Macrocytic Anemia 2° to Autoimmune Gastritis

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Macrocytic Anemia 2° to **Autoimmune Gastritis**

Type II Hypersensitivity Reaction
Complication: Gastric Carcinoma 2° ↑ Gastrin

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Normocytic anemia with elevated unconjugated bilirubin = hemolysis



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Iron Deficiency Anemia (IDA)



A **biopsy** is taken in the region of the aphthous lesion.
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Ulcerative (Neutrophilic) Colitis:
Continuous involvement from anorectal region
“Colitis” – doesn’t involve small bowel
Not associated with aphthae (macroscopic: pseudopolyps)

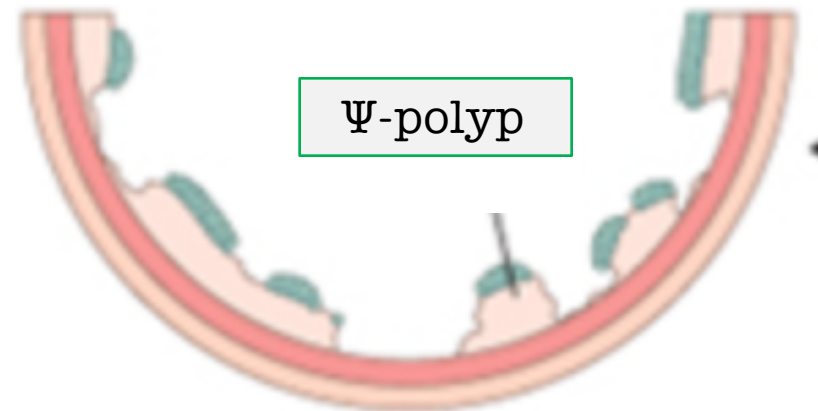
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Angiodysplasia (AVM)



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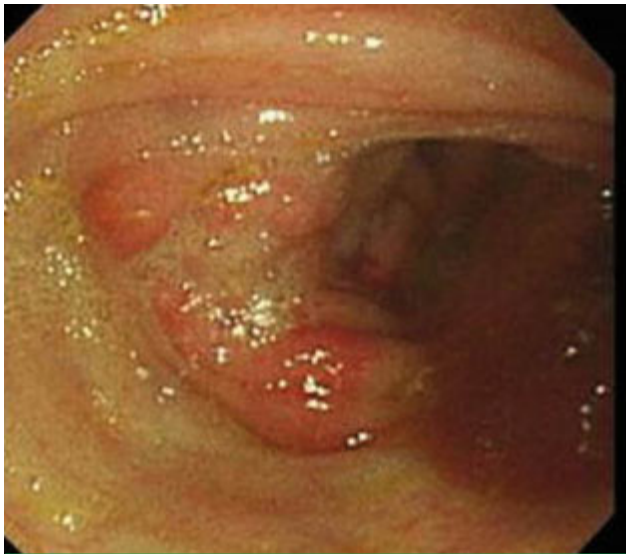
The vascular channels may be separated from the intestinal lumen only by the vascular wall and a layer of attenuated epithelial cells.

Minor injury → significant bleeding.



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Adenocarcinoma

Lynch Syndrome (hereditary non-polyposis): **DNA mismatch repair** (MMR) a/w microsatellite instability. Right sided CRC, young age (a/w endometrial cancer)

Familial adenomatous polyposis: a/w APC mutation
(**A**denomatous **P**olyposis **C**oli)
100's of adenomas and colon cancer at young age

A **biopsy** is taken in the region of the aphthous lesion.
Which of the following is **most likely to be described**?



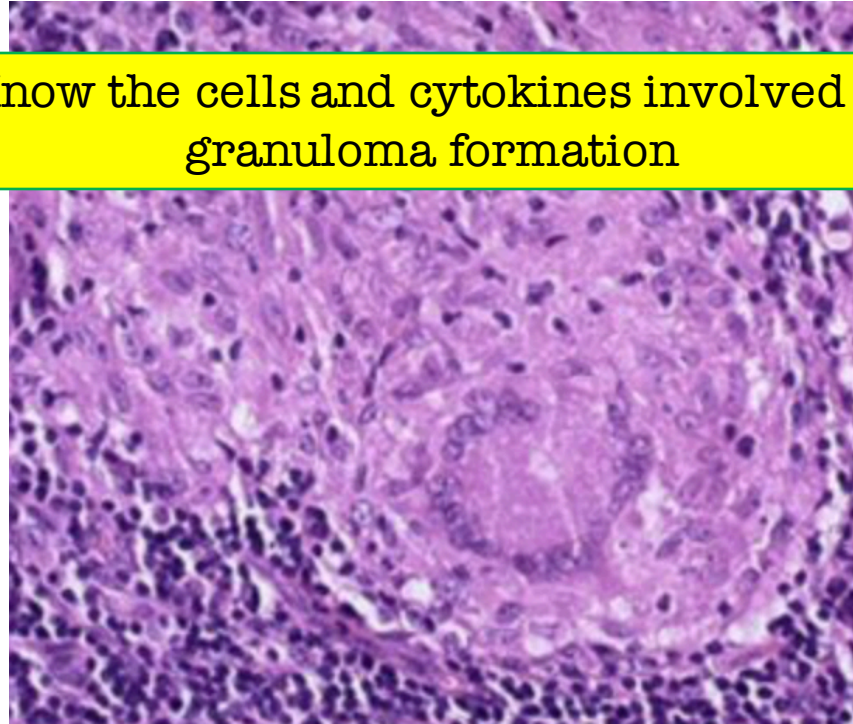
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Crohn's (Granulomatous) Colitis
Terminal ileum > ileocolonic > colonic
Aphthae: earliest lesion → progress, coalesce
Skip Lesions

A **biopsy** is taken in the region of the aphthous lesion.
Which of the following is most likely to be described?

Know the cells and cytokines involved in
granuloma formation



Crohn's (Granulomatous) Colitis

Terminal ileum > ileocolonic > colonic

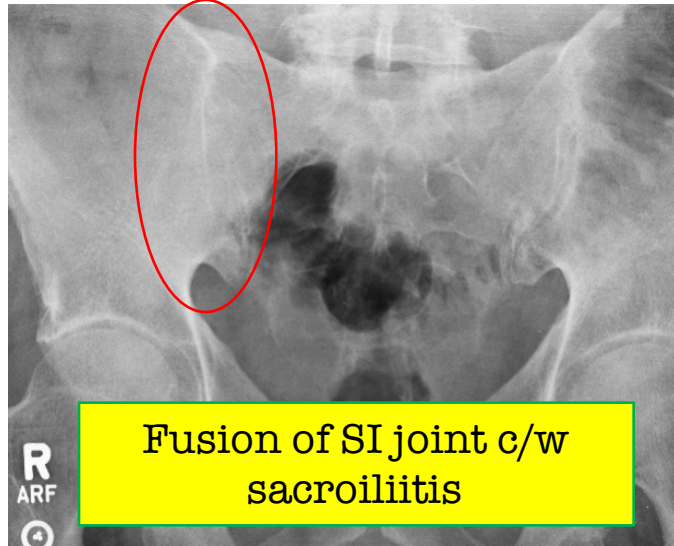
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Skip Lesions

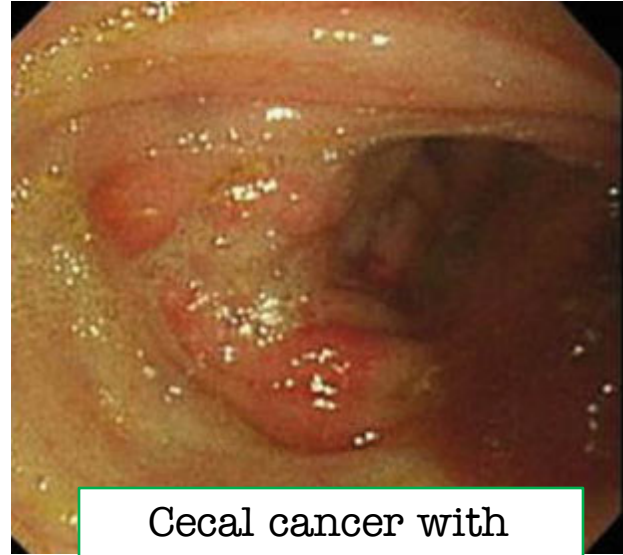
The biopsy reveals the presence of granulomas.
Which of the following **epiphenomenon** is the patient most likely to experience?



A



B



C



D

The biopsy reveals the presence of granulomas.

Which of the following **epiphenomenon** is the patient most likely to experience?

Step 1. Needed to identify this patient has Crohn's

Step 2a. Crohn's has many complications (esp fistulae)

Step 2b. Crohn's has many extraintestinal manifestations

The biopsy reveals the presence of granulomas.
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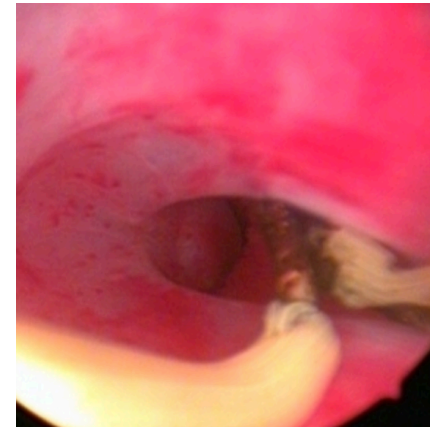
Step 1. Needed to identify this patient has Crohn's
Step 2a. Crohn's has many complications (esp fistulae)
Step 2b. Crohn's has many extraintestinal manifestations



Anal



Cutaneous



Entero-Visceral

The biopsy reveals the presence of granulomas.

Which of the following **epiphenomenon** is the patient most likely to experience?

Step 1. Needed to identify this patient has Crohn's

Step 2a. Crohn's has many complications (esp fistulae)

Step 2b. Crohn's has many extraintestinal manifestations

This question is asking about both complication and extraintestinal manifestations.

The biopsy reveals the presence of granulomas.

Which of the following **epiphenomenon** is the patient most likely to experience?



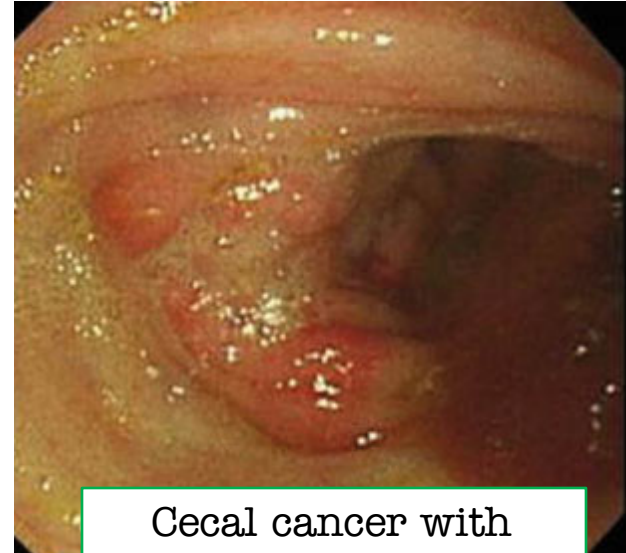
Very dilated colon

Implication: **Toxic** Megacolon (clinical diagnosis)

Associated with UC

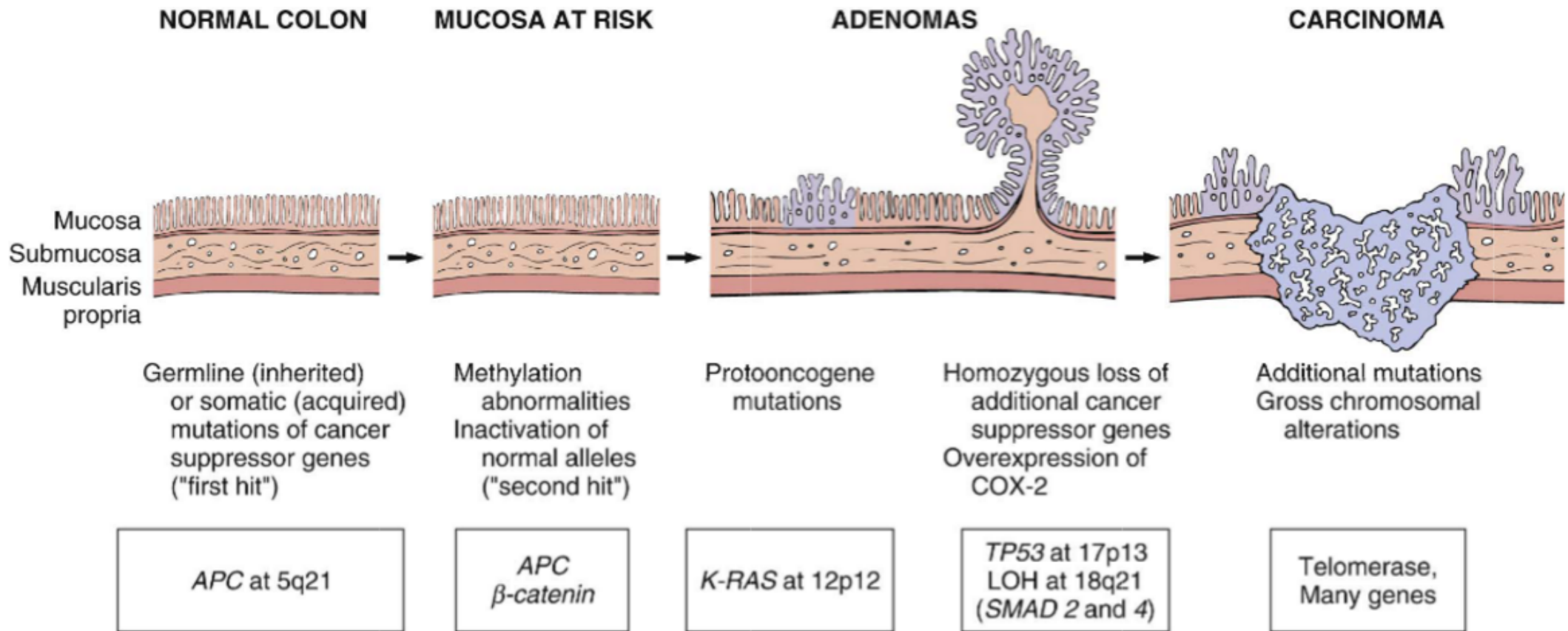
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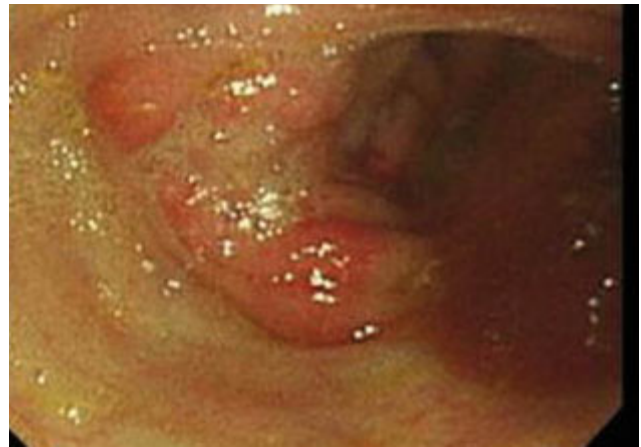
Cecal cancer with
early APC mutation

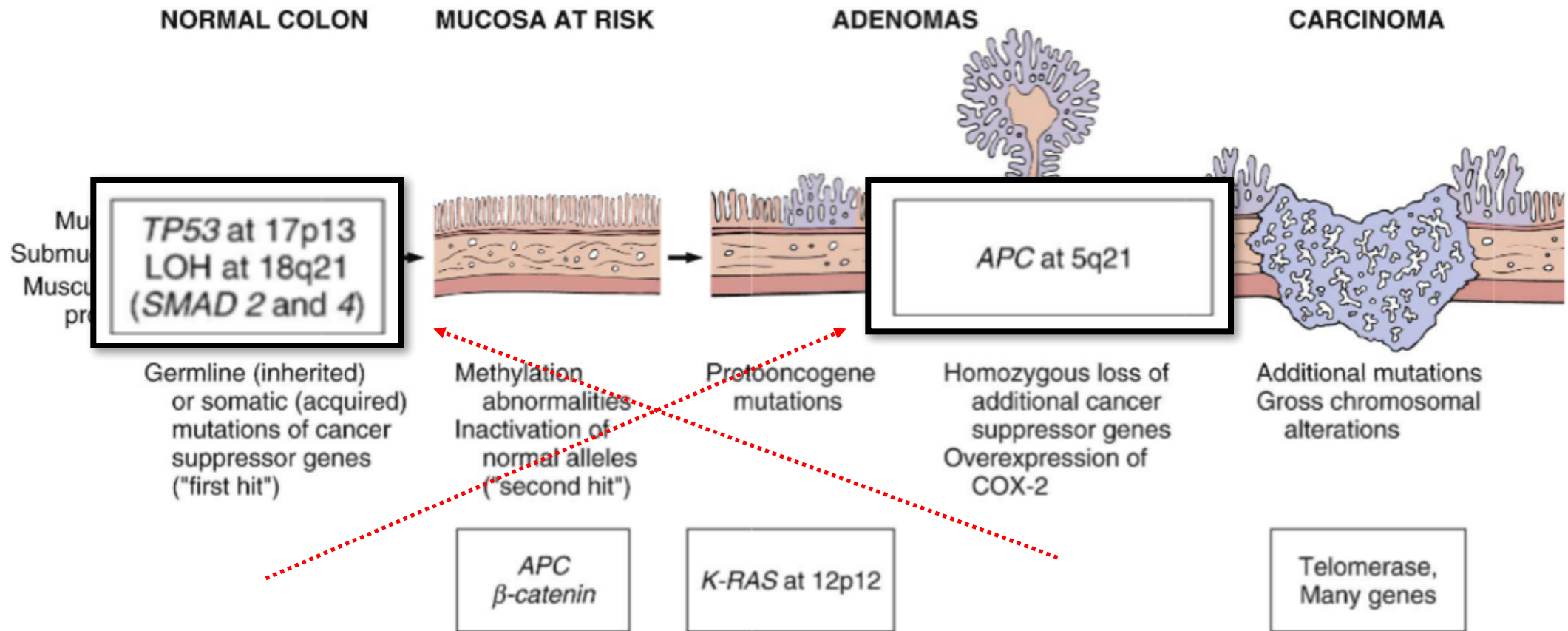
C



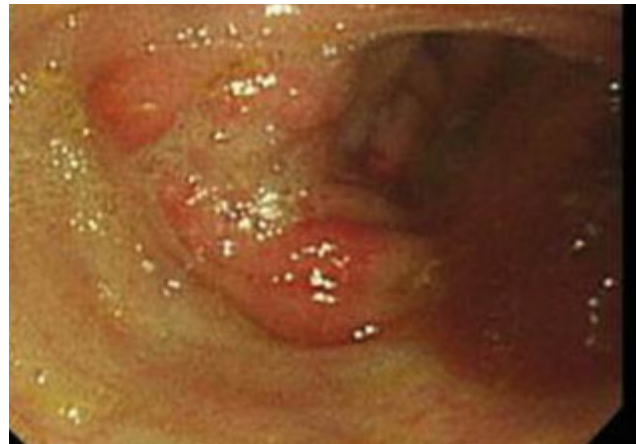
Cecal cancer with early APC mutation

Adenoma-Carcinoma Sequence





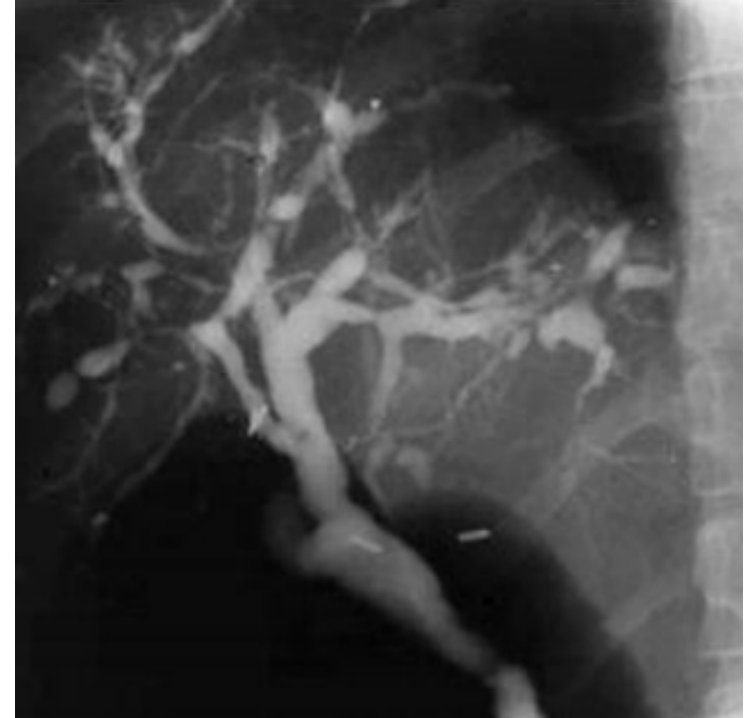
CRC complicating UC (Pancolitis):
 Early p53, late APC
 Young age, Multifocal, Proximal



The biopsy reveals the presence of granulomas.
Which of the following **epiphenomenon** is the patient most likely to experience?

IBD question with cholangiogram = PSC

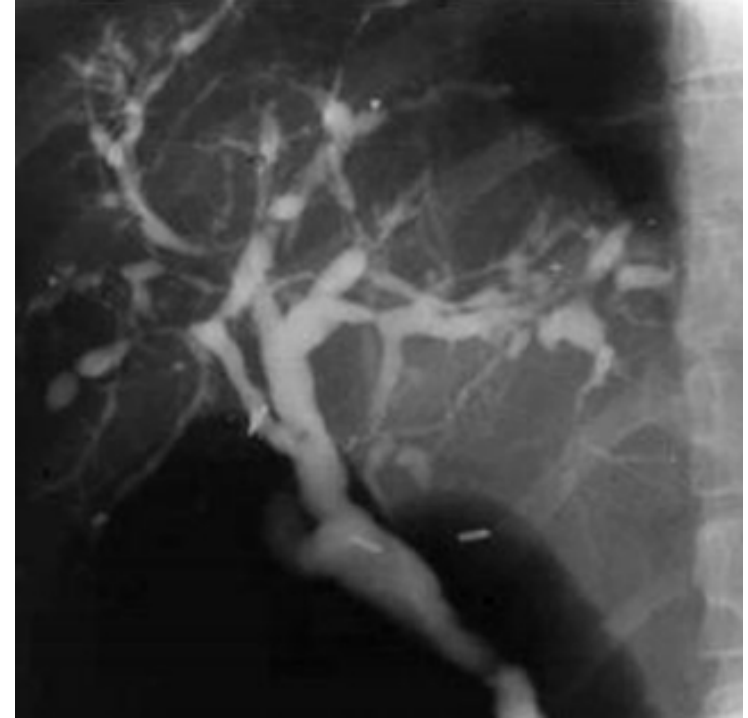
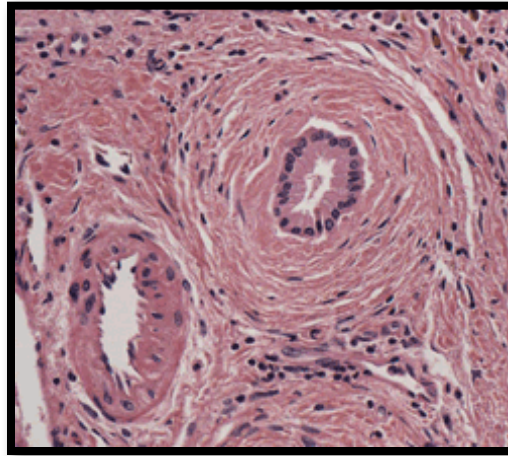
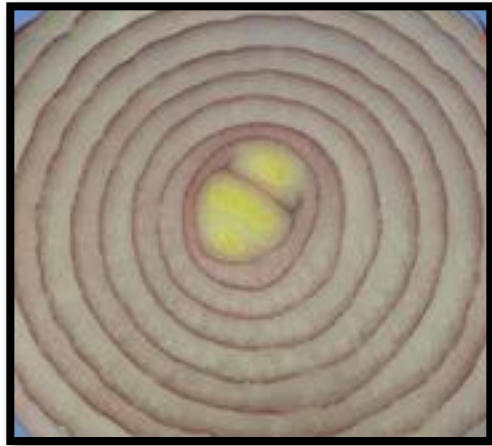
Sclerosing Cholangitis
Intra/Extrahepatic beading
Onion skin fibrosis
Complication of UC



D

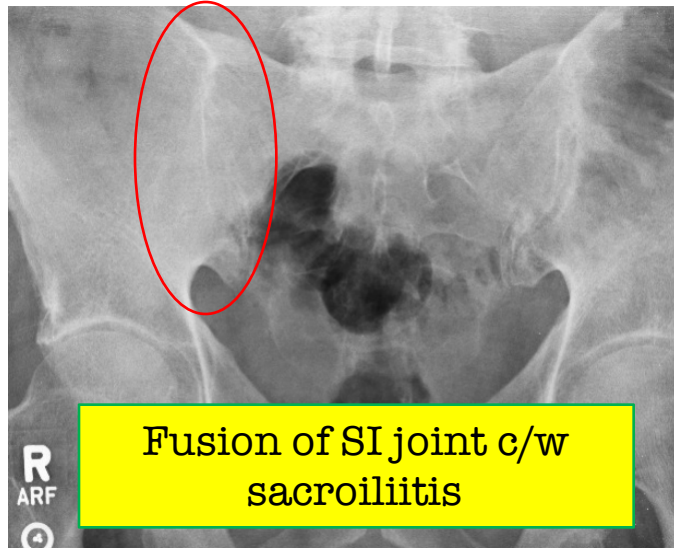
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Sclerosing Cholangitis
Intra/Extrahepatic beading
Onion skin fibrosis
Complication of UC



D

The biopsy reveals the presence of granulomas.
Which of the following **epiphenomenon** is the patient most likely to experience?



A

Toxic Megacolon, UC

B

Fusion of SI joint c/w
sacroiliitis

C

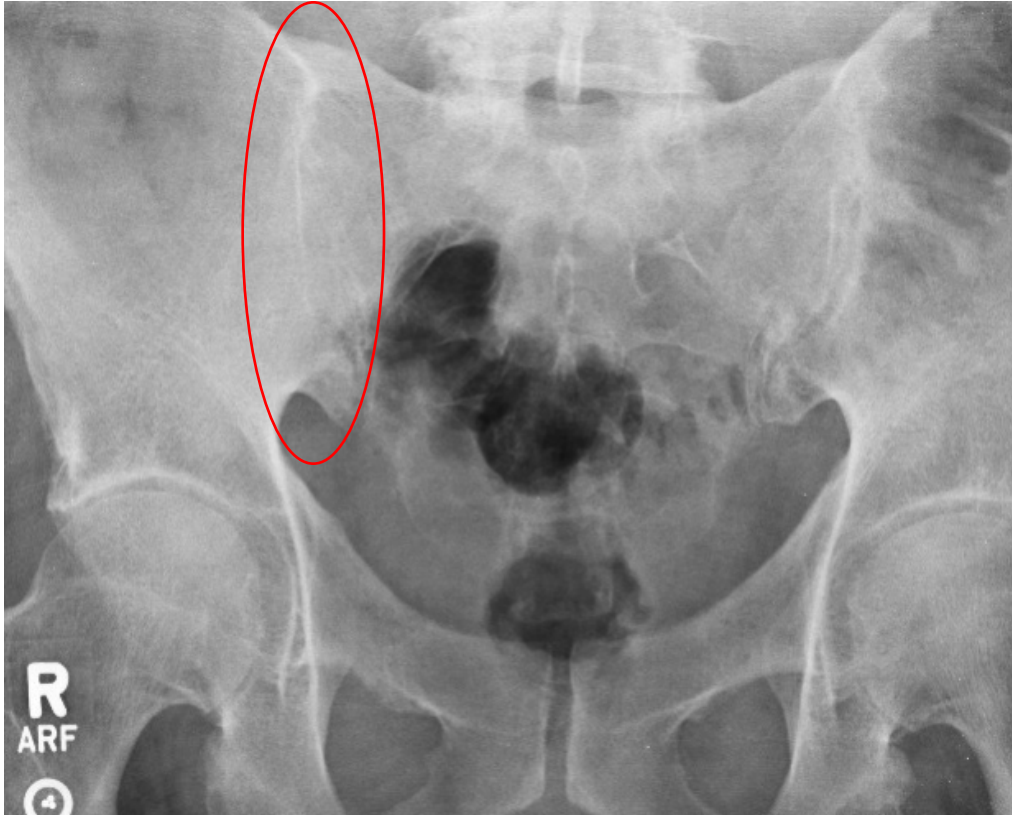
Sporadic CRC

D

Cholangiogram

PSC, UC

The biopsy reveals the presence of granulomas.
Which of the following **epiphenomenon** is the patient most likely to experience?



MSK Extraintestinal Manifestation:
Fusion of SI joint c/w **sacroiliitis**

Inflammatory LBP

1. Indolent
2. Persistent
3. Worse in AM
4. Better with activity
5. Young male



B

Steatorrhea

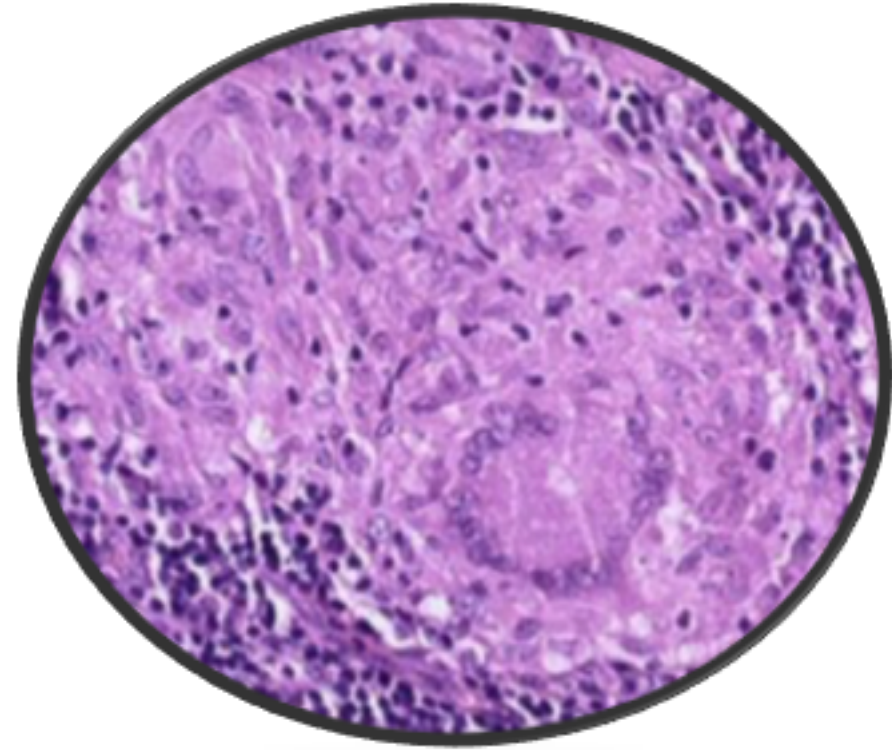
Fat soluble vitamin deficiencies
Renal stones (↑ oxalate absorption)

Skin

Erythema nodosum
Enterocutaneous fistulae

Loss of Terminal Ileum

B-12 deficiency
Gall stones (↓ enterohepatic circulation)



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