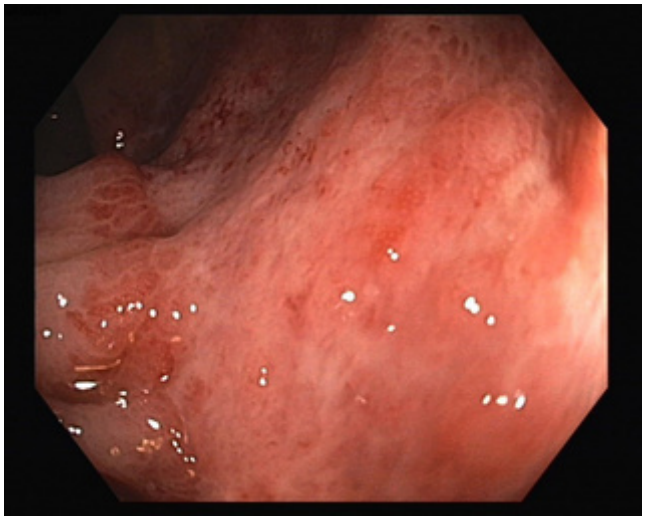
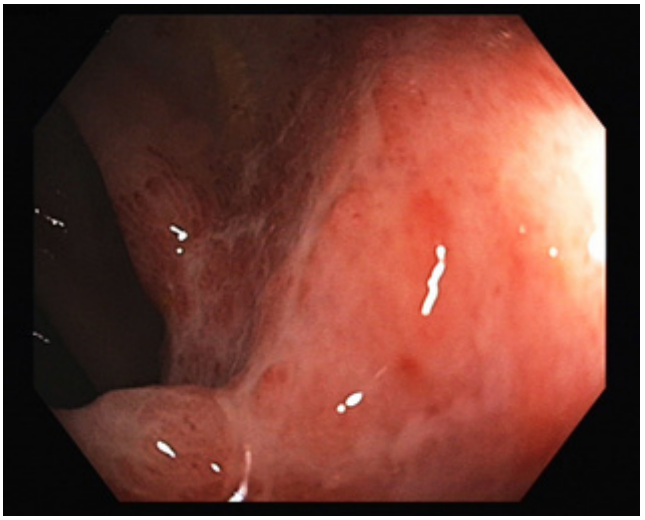
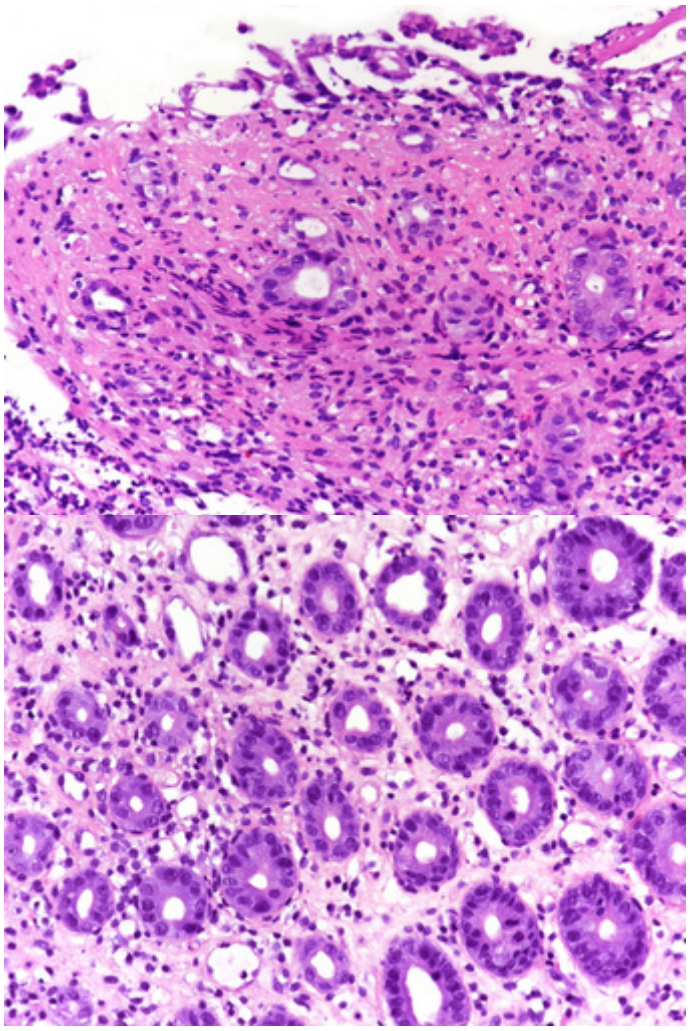
August 2019

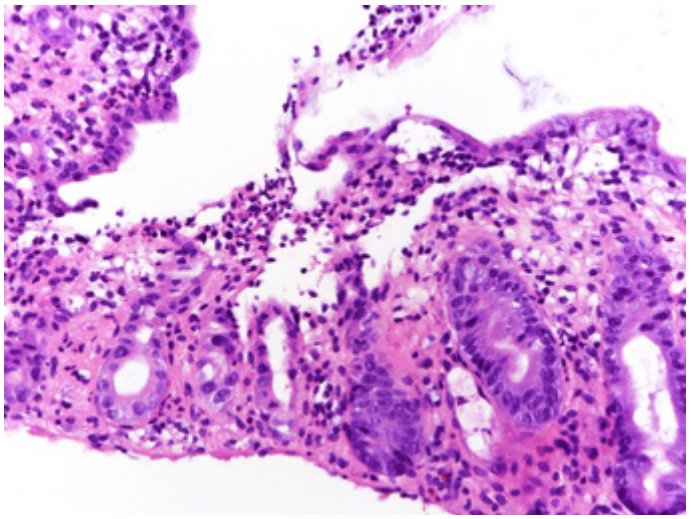
Colonic biopsies from a 61-year-old female with haematochezia.

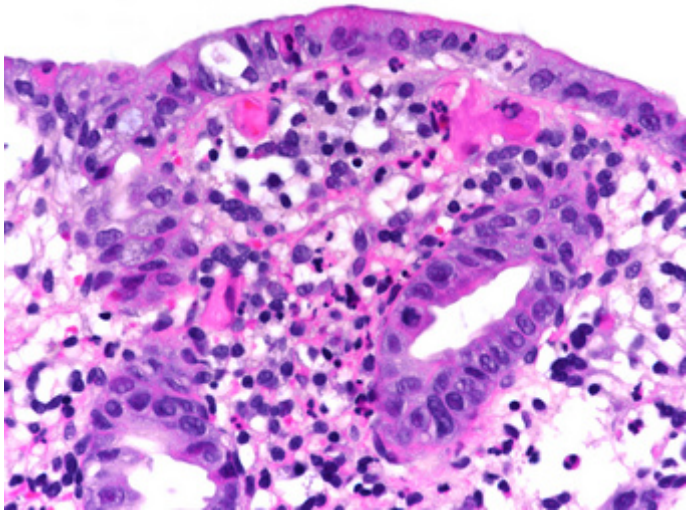
What is your diagnosis?

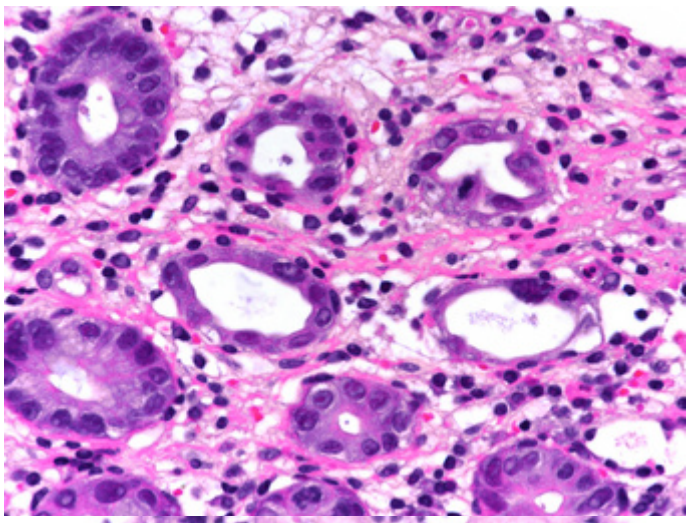


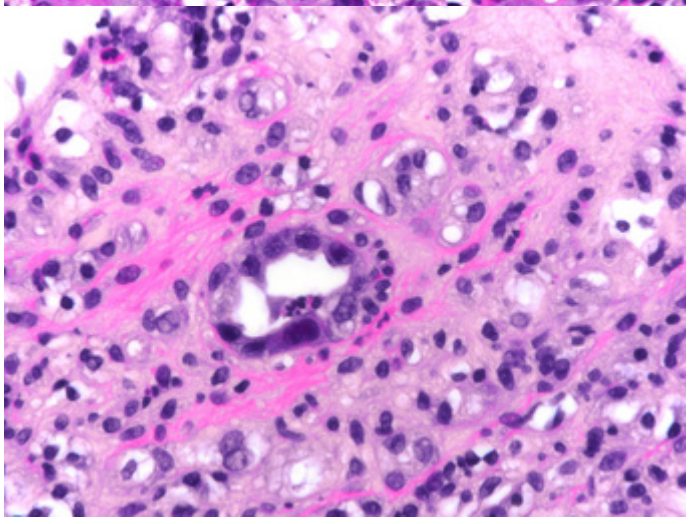












Diagnosis:

Ischaemic colitis.

Comment:

Endoscopy shows a sharply defined segment of inflamed mucosa within the sigmoid colon, as illustrated by fragile mucosa with petechial haemorrhages and scattered erosions (Panels A and B). On low power, the mucosa appears pale yet strikingly eosinophilic, with fibrosis and/or hyaline-like material in the lamina propria (Panel C). Crypts appear atrophic with gradual transition into superficial erosion (Panels D and E). Intravascular fibrin thrombi are occasionally seen (Panel F). On high magnification, some crypt cells show enlarged markedly hyperchromatic nuclei (with increased nuclear/cytoplasmic ratio), and mitotic figures are easily discernible (Panels G and H).

Ischaemic colitis is a disorder that can be transient or more persistent. Acute ischaemia may result in mucosal ulceration or progress to infarction, whereas chronic disease leads to progressive mucosal atrophy and fibrosis. Its diverse origins and variable clinical presentations can be broadly categorized into two categories: (i) occlusive disease, due to embolization and/or or thrombosis (acute ischaemia) or severe atherosclerosis (chronic ischaemia); or (ii) non-occlusive in low-perfusion states, such as shock, sepsis, or as a result of medication (e.g. non-steroidal anti-inflammatory drugs, NSAIDs).

The left (descending and sigmoid) colon is preferably involved. In right-sided ischaemia affected individuals often require surgical therapy. Usually, the disease is restricted to a sharply defined segment, in particular in occlusive disease. Of note, ischaemic changes due to NSAIDs preferably affect the right colon and often in a more patchy (multifocal, erosive/ulcerous) pattern.

Upon histology, early stages characteristically show loss of mucin and surface epithelial cells, a mild-to-moderate inflammatory cell infiltrate, and haemorrhage with vascular congestion within the lamina propria. Late stages demonstrate damaged and regenerating crypts intermixed with normal mucosa. A reduced number and size of crypts and fibrosis in the lamina propria suggest a more severe injury. The chronic stage of ischaemic colitis is associated with persistent ulceration and/or pronounced (sub-)mucosal fibrosis. A marked fibrinous exudate may be present on the mucosal surface. If this is present in combination with fading, so-called “ghost crypts” (filled with purulent debris) and membranes containing mucus and neutrophils, secondary infection, e.g. by Clostridium spp. should be ruled out.

Nuclear changes simulating dysplasia (enlargement, hyperchromasia, increased nuclear/cytoplasmic ratio) may occur secondary to ischaemia within the crypt epithelium, as nicely illustrated in the present case. These changes (by some referred to as “pseudo-dysplasia” or “dysplasia-like atypia”) are quite common and may encounter in large and small bowel. Please note that up-regulation of cell cycle proteins that are sometimes used as markers of dysplasia or neoplasia, including p53, p16, and MIB-1, may be observed, which is an important diagnostic pitfall. Awareness of this phenomenon and close attention to the histological changes present in the background mucosa will help to avoid mis-/overdiagnosis and are of more help than high-power examination.

For further reading:

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- Yadav S, Dave M, Edakkanambeth Varayil J, Harmsen WS, Tremaine WJ, Zinsmeister AR, Sweetser SR, Melton LJ 3rd, Sandborn WJ, Loftus EV Jr. A population-based study of incidence, risk factors, clinical spectrum, and outcomes of ischemic colitis. Clin Gastroenterol Hepatol. 2015; 13: 731-738.

› Patil DT, Odze RD. Biopsy diagnosis of colitis: an algorithmic approach. Virchows Arch. 2018; 472: 67-80.

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