Ring mitosis: what does that mean in a colonic biopsy?

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A 77-year-old female with metabolic syndrome, chronic kidney disease, cardiomyopathy with an ejection fraction of 30%, bronchiectasis, interstitial lung disease and gout who is on several medications and regular follow-up. She presented to the accident and emergency department with diarrhea and per-rectal bleeding of one-week duration. Digital rectal examination was unremarkable. A Computed Tomography (CT) scan revealed extensive diffuse diverticular disease of the colon, the sigmoid colon showed soft tissue thickening associated with lumen narrowing and suspicious lymph nodes were seen. However, the CT scan did not show a mass lesion. This was followed by a colonoscopy which showed unremarkable findings. Multiple colonic biopsies were taken for histopathological examination. A high-power view of the biopsy is shown in (Figure 1).

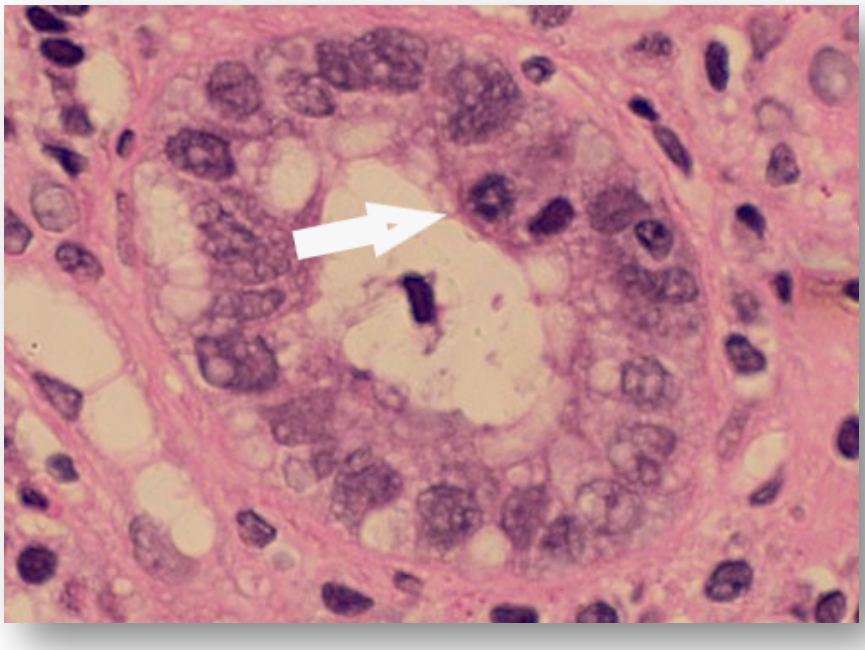

Figure 1

Question

What is the most likely diagnosis?

a. Inflammatory bowel disease.
b. Non-steroidal anti-inflammatory drugs induced Colitis.
c. Colchicine-induced colitis.
d. Infectious colitis.
e. Allergic colitis.

Answer

c. Colchicine-induced colitis.

Discussion

A wide range of histopathological changes can be seen in drug-related injury in the gastrointestinal tract. The histopathological findings are usually non-specific. Rendering a specific diagnosis of drug induced injury is sometimes challenging as the morphological and the clinical features overlap. Correlation with clinical findings and checking the drug chart is important for accurate diagnosis. Colchicine is a drug that is used in the treatment of gout and many rheumatological disorders. Its toxicity is frequently seen in patients with renal failure and liver disease[1]. Patients with colchicine colitis usually presents with abdominal pain and diarrhoea. The mucosal injury can affect both upper and lower gastrointestinal tract[2]. This drug prevents the polarization of tubulin into microtubules resulting into mitotic arrest[3]. Hence, frequent epithelial mitosis including ring-type mitosis is seen (Figure 1). Reactive atypia featuring nuclear crowding and hyperchromasia can also be seen.

The top differential diagnoses of colchicine toxisty are toxicity-related changes caused by Taxane and Mycophenolate Mofetil injury. In Taxane-toxicity (which is a chemotherapy agent used for solid organ malignant neoplasm) the histopathologic changes are indistinguishable from changes caused by colchicine toxicity i.e. there will be mitotic arrest and apoptotic bodies. The main difference is the chromatin in Toxane will be more clumped rather than in a ring pattern. The second differential diagnosis is injury caused by Mycophenolate Mofetil. The crypts in mycophenolate mofetil toxicity will show numerous apoptosis with crypts dropout while the typical arrested mitosis seen in colchicine toxicity is not a feature. In both case, correlation with medication history is essential for final diagnosis.[4]. Once the drug is stopped, the symptoms related to colchicine toxicity and the associated histologic findings.

Disclosure

The ethics committee at Royal Hospital approved publishing this case presentation

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