Marked Eosinophilia in a 27-Year-Old Woman With Recent Onset Ulcerative Colitis

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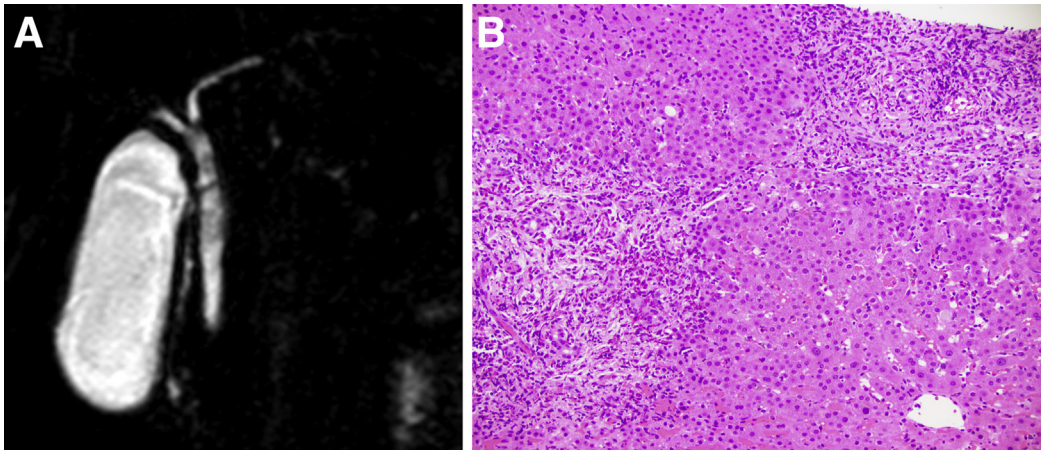

Question: A 27-year-old woman of Asian Indian descent with no significant medical history and on no medications was referred for 2 months of bloody diarrhea associated with lower abdominal cramping and a 10-lb weight loss. Her history was otherwise remarkable for travel to India several years prior and work as a clinical researcher in the bone marrow transplant unit. Her clinical examination was unremarkable. Laboratory studies demonstrated an alkaline phosphatase of 221 U/L, alanine aminotransferase of 55 U/L, aspartate aminotransferase of 41 U/L, normal bilirubin, leukocyte count 28 $\times$ 10^3/mm^3 (34% eosinophils), and significantly elevated fecal leukocytes, erythrocyte sedimentation rate, and C-reactive protein. Colonoscopy and biopsies were consistent with chronic active ulcerative pancolitis. After a lack of response to mesalamine and budesonide, she had a complete clinical, endoscopic, and histologic response to vedolizumab, but the eosinophilic leukocytosis worsened reaching a peak white blood cell count of 40 $\times$ 10^3/mm^3 (46% eosinophils) and cholestatic liver function tests worsened with a peak alkaline phosphatase of 500 U/L, aspartate aminotransferase of 135 U/L, and alanine aminotransferase of 290 U/L, with a normal bilirubin.

Extensive investigations, including testing for stool ova and parasites, strongyloidiasis, toxoplasma, toxocara, entamoeba, tuberculosis, cyclospora, and isospora, were negative. Tryptase was negative. IgE was elevated to 317 U/L. Initial colon biopsies were re-reviewed and did not demonstrate increased tissue eosinophils. Flow cytometry of blood and marrow and a bone marrow biopsy showed increased eosinophils, but no evidence of a malignant process. Serologies for hepatitis A, B, and C were negative for acute or chronic infection. Antinuclear antibody was positive to 1:640, cytoplasmic-antineutrophil cytoplasmic antibody positive to 1:1280, anti-smooth muscle, antimitochondrial antibodies were negative.

Magnetic resonance cholangiopancreatography was notable for subtle beading of the right and left intrahepatic biliary ducts suggestive of small-duct primary sclerosing cholangitis (PSC) (Figure *A*). A liver biopsy was obtained, and a representative hematoxylin and eosin stain is shown (Figure *B*).

What is the diagnosis?

Look on page 30 for the answer and see the *Gastroenterology* web site (www.gastrojournal.org) for more information on submitting your favorite image to Clinical Challenges and Images in GI.

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Conflicts of interest
The authors disclose no conflicts.

0016-5085/$36.00
https://doi.org/10.1053/j.gastro.2020.08.030

Answer to: Image 2 (Page 29): Eosinophilic Cholangitis

A liver biopsy showed active lobular inflammation with prominent eosinophilic infiltrates and ductal injury. These findings, combined with intrahepatic ductal irregularities on magnetic resonance cholangiopancreatography are consistent with eosinophilic cholangitis (EC). The patient was started on prednisone and had a rapid and remarkable normalization of eosinophilic leukocytosis and liver function tests, confirming the diagnosis.

EC is rare and diagnostically challenging. Approaches to the diagnosis and management of EC are limited to case reports, typically noting the following: biliary obstruction or ductal thickening, histopathologic eosinophilic infiltration, and resolution after corticosteroid therapy. Peripheral eosinophilia is associated in approximately two-thirds of cases.[1] In our patient with ulcerative colitis (UC), PSC was initially suspected based on the alkaline phosphatase elevation and biliary ductal abnormalities on imaging; however, the resolution of hepatic biochemical abnormalities and eosinophilia with corticosteroids ruled out PSC.

The cause of EC is not known. Case reports demonstrate possible associations with hypereosinophilic syndrome, eosinophilic gastroenteritis, and drug-induced reactions, although most cases have no identified association.[1] Eosinophilia has been observed in patients with UC and PSC. A retrospective study demonstrated that patients with UC with recurrent eosinophilia had increased prevalence of PSC and more severe UC versus a matched population with UC without eosinophilia.[2] Data from Lampinen et al[3] (2005) points to increased peripheral eosinophilia in inactive UC, even over active UC. Finally, we can speculate that because vedolizumab inhibits $\alpha 4\beta 7$ integrin, which is also expressed on eosinophils, vedolizumab may prevent eosinophil transmigration into the intestinal tissues, and, therefore, may have played a role in the progression of systemic eosinophilia and biliary eosinophilic infiltration in this patient.

In conclusion, EC is a rare but reversible condition that can mimic PSC and is an important consideration for patients with evidence of biliary abnormalities associated with peripheral eosinophilia.

Keywords: Ulcerative Colitis; Cholangitis; Eosinophilia; Eosinophilic Cholangitis.

References

1. Matsumoto N, Yokoyama K, Nakai K, et al. A case of eosinophilic cholangitis: Imaging findings of contrast-enhanced ultrasonography, cholangioscopy, and intraductal ultrasonography. World J Gastroenterol 2007;13:1995–1997.
2. Barrie A, Mourabet ME, Weyant K, et al. Recurrent blood eosinophilia in ulcerative colitis is associated with severe disease and primary sclerosing cholangitis. Dig Dis Sci 2013;58:222–228.
3. Lampinen M, Ronnblom A, Amin K, et al. Eosinophil granulocyte are activated during the remission phase of ulcerative colitis. Gut 2005;54:1714–1720.