A 17-Year-Old Boy with Familial Adenomatous Polyposis and Unexpected Endoscopy Findings

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A 17-year-old boy with familial adenomatous polyposis (FAP) and a strong family history of the disease (father and paternal grandmother, one uncle, two aunts, and two cousins) initially presented to our clinic at age 15 years for follow-up care of his FAP. The patient’s father, paternal grandmother, uncle, and one of his aunts had all developed colon carcinoma secondary to FAP, and one of his cousins required a complete colectomy and was later diagnosed with gastric cancer. The patient’s father had undergone complete colonic and partial small bowel resection.

The patient was diagnosed with FAP at age 11 years, when a colonoscopy revealed three small polyps, each of which were characterized as tubular adenomas on biopsy. During his first visit to our clinic, at age 15 years, the patient denied rectal bleeding, diarrhea, constipation, abdominal pain, or skin abnormalities. Physical examination was benign and review of systems was positive only for anxiety, depression, and hyperactivity disorder.

The patient underwent an upper endoscopy and colonoscopy at age 15 years. Upper endoscopy biopsy results revealed esophagitis consistent with reflux, chronic gastritis, and duodenitis. Repeat colonoscopy showed scattered, small adenomatous polyps (Figure 1), classified as tubular adenomas without high-grade dysplasia on biopsy. At that time, he was prescribed sulindac and omeprazole and advised to follow a diet to reduce acid reflux.

The patient was seen at a follow-up appointment at age 16 years, during which he had no complaints and reported compliance with the medication regimen. Two months later, repeat colonoscopy showed rectal inflammation, and biopsy of polyps located on the left side of the colon again revealed tubular adenomas. Interestingly, visualization of the duodenum on upper endoscopy showed flattened duodenal mucosa with decreased villi (Figure 2) and scalloping. The biopsy showed flattening of the mucosa and increased intraepithelial lymphocytes.

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Editor’s note: Each month, this department features a discussion of an unusual diagnosis. A description and images are presented, followed by the diagnosis and an explanation of how the diagnosis was determined. As always, your comments are welcome via email at pedann@Healio.com.
Celiac Disease Concomitant with Familial Adenomatous Polyposis

Celiac serology was obtained, and showed tissue transglutaminase (tTG) immunoglobulin A (IgA) of 60 units (normal <20), deamated antigliadin peptide IgA of 37 units (normal <20), and deamated antigliadin peptide immunoglobulin G (IgG) of 33 units (normal <20). At this time, the patient was diagnosed with celiac disease and advised to begin a gluten-free diet. Although he has a strong family history of FAP, the patient has no family history of celiac disease, and both of his parents tested negative on celiac serology. His only sibling, a 15-year-old brother, is in good health and underwent diagnostic upper and lower endoscopies that revealed no evidence of FAP or celiac disease. The patient and his family met with a nutritionist who provided gluten-free diet education.

The patient was seen in clinic 1 year later, and repeat laboratory work at this time showed persistently elevated celiac serology, with tTG IgA of 47 units, deamated antigliadin peptide IgA of 40 units, and deamated antigliadin peptide IgG of 38 units. He admitted to daily bread consumption with overall difficulty following the gluten-free diet. He again denied any complaints, including abdominal pain, nausea, vomiting, diarrhea, constipation, or skin abnormalities. The patient was scheduled for repeat upper and lower endoscopy, which showed scattered gastric polyps but an absence of colonic polyps. The duodenum once again exhibited flattening of the mucosa consistent with celiac disease. The patient was advised to continue his current medications, and met with the nutritionist to discuss strategies for achieving better adherence to a gluten-free diet.

**DISCUSSION**

FAP is an autosomal dominant condition (McKusick catalog number 175100) marked by adenomatous polyp formation in the gastrointestinal tract secondary to mutations in the adenomatous polyposis coli gene (APC), the gene product of which is an important negative regulator of the Wnt signaling pathway. Celiac disease, another gastrointestinal syndrome, is a chronic autoimmune condition in which exposure to dietary gluten in genetically susceptible people leads to small intestinal enteropathy.

To our knowledge, there have been no reported cases of concomitant celiac disease and FAP. FAP is associated with duodenal malignancy, congenital hypertrophy of the retinal pigment epithelium, desmoid tumors, and other extracolonic malignancies. Likewise, celiac disease has been reported in conjunction with certain conditions, namely small bowel malignancy, and autoimmune diseases including Addison’s disease, autoimmune thyroiditis, type 1 diabetes mellitus, chronic autoimmune gastritis, and autoimmune hepatitis. Rare case studies have also reported concomitant celiac disease and hyperplastic gastric polyps, but we are unaware of any previously reported association with FAP.

In this case, we described a 17-year-old boy with FAP who was incidentally found to have celiac disease on duodenal biopsy and serology. At this time, it is unclear whether a causal association exists between celiac disease and FAP. Should any such connection exist, the patient’s celiac disease is more likely secondary to his inherited polyposis syndrome, as opposed to the converse, since he has a strong family history of FAP. If there is no link between these pathologies, than our patient represents an exceedingly rare case. With celiac disease prevalence approximately 1 in 100 and FAP prevalence roughly 1 in 11,300 to 37,600, the likelihood that the patient independently developed both is between 1 in 1.13 million and 1 in 3.76 million.

Currently, no readily apparent mechanism links FAP and celiac disease. A clear genomic link has not been found, as the genetic polymorphisms for each disease are not located in close proximity to one another, decreasing the likelihood of a single mutation or crossover event. Specifically, the FAP-related gene APC is on chromosome 5q21-5q22, whereas HLA-DQ2 and HLA-DQ8, the genes strongly associated with celiac disease, are both located on chromosome 6p21. Because FAP can produce duodenal polyps, FAP could theoretically induce duodenal inflammation that would precipitate an autoimmune reaction and prompt a
response against dietary gluten, leading to celiac disease. To our knowledge, however, no reports exploring this possibility exist in the current literature.

Of note, after 2 years of treatment with sulindac the patient was found to have a complete absence of polyps on colonoscopy. This finding suggests that in this case the medication successfully caused polyp regression.

CONCLUSION

Further research exploring a possible connection between FAP and celiac disease is merited. At this time, we recommend that physicians caring for FAP patients retain a reasonable index of suspicion for celiac disease, and observe for indicators of celiac disease during upper endoscopy, including flattening and scalloping of the duodenal mucosa. Our patient will undergo a yearly upper endoscopy and colonoscopy for continued surveillance, and has been counseled to continue the sulindac regimen and gluten-free diet.

REFERENCES