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CASE REPORT

Gastroenterology: Inflammatory Bowel Disease

Systemic lupus erythematosus: An imitator for inflammatory bowel disease

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Abstract

Systemic lupus erythematosus (SLE) is a systemic autoimmune disease that may involve any organ in the body. Inflammation of the bowel wall as a presenting symptom of SLE is uncommon and can lead to delays in diagnosis and treatment. Here, we discuss the case of an adolescent male who presented with weight loss, intermittent fevers, abdominal pain, vomiting, and diarrhea. Initially, inflammatory bowel disease (IBD) was suspected, but endoscopic evaluation did not support this diagnosis. A computed tomography scan of the abdomen revealed signs of serositis, concerning for an inflammatory process and the patient was referred to Rheumatology for further evaluation. Autoimmune serologies were obtained and combined with clinical findings confirmed a diagnosis of SLE. This case advances our understanding of SLE as a multisystemic disease and highlights an unusual presentation involving the gastrointestinal tract, which can mimic IBD and potentially delay the diagnosis and treatment process.

KEYWORDS

connective tissue disease, inflammatory autoimmune disease, intestinal inflammation

1 | INTRODUCTION

Systemic lupus erythematosus (SLE) is an autoimmune disease with a relapsing and remitting clinical course that can affect any organ in the body.[1] Although the exact etiology of SLE remains unclear, research suggests a combination of factors initiate an immune response that promotes the production of autoantibodies targeting nuclear and cytoplasmic antigens.[1] SLE has a strong female predominance of 9:1, with peak age occurring during reproductive years.[2] However, young men diagnosed with SLE often have a more aggressive clinical course.[3]

SLE frequently presents with multisystemic symptoms, and presentation limited solely to the gastrointestinal tract is uncommon. However, gastrointestinal

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TABLE 1 Abnormal hematologic work-up from initial admission and readmission 7 days later with Seattle Children's Hospital lab reference ranges listed.

Laboratory data (units)	Hematologic lab values (range during admission)	Reference range
Initial admission		
Absolute lymphocyte count (mm^3)	600–742	1100–4500
Absolute monocyte count (mm^3)	1133–1230	0–900
Hemoglobin (g/dL)	10.1–12.1	13–16
Hematocrit (%)	32.2–35.6	37–49
Mean corpuscular volume (fL)	77.4–83.9	78–98
Serum iron (mcg/dL)	24	40–140
Total iron binding capacity (mcg/dL)	211	250–400
Iron saturation (%)	11	15–50
Ferritin (ng/mL)	388	13–83
Albumin (g/dL)	2.9–3.1	3.8–5.4
Potassium (mEq/L)	3.1–4.9	3.5–5.5
Magnesium (mg/dL)	1.3–1.9	1.8–2.4
Phosphorus (mg/dL)	2.0–3.8	2.9–5.4
Calcium (mg/dL)	6.4–7.7	8.7–10.7
Readmission 7 days later		
Absolute lymphocyte count (mm^3)	406–795	1100–4500
Absolute monocyte count (mm^3)	627–1242	0–900
Hemoglobin (g/dL)	10.4–11.6	13–16
Hematocrit (%)	31.7–36.7	37–49
Erythrocyte sedimentation rate (mm/h)	7–68	0–15
Albumin (g/dL)	3.0–4.2	3.8–5.4
Potassium (mEq/L)	2.9–5.2	3.5–5.5
Magnesium (mg/dL)	1.4–2.1	1.8–2.4
Calcium (mg/dL)	7.8–8.8	8.7–10.7
Antinuclear antibody titer and pattern	Titer greater than 1:5120, speckled pattern	Not applicable
Complement component 3 (mg/dL)	65	83–203
Complement component 4 (mg/dL)	7	16–52
Antidouble stranded DNA (IU/mL)	32	0–9
Antinuclear ribonucleoprotein levels (AI)	Greater than 8	0–0.9
Antismith level (AI)	Greater than 8	0–0.9

Note: Ranges for each lab listed for each admission (initial and 7 days later). Other blood work was within lab range for each admission. Of note, lab range such as those for electrolytes were expected to normalize following supplementation as is reflected in the upper range.

Abbreviations: AI, antibody index; dL, deciliter; fL, femtoliter; g, gram; IU, international units; L, liter; mcg, microgram; mEq, milliequivalent; mg, milligram; mL, milliliter; mm, millimeter; mm3, cubic millimeter; ng, nanogram.

involvement in SLE may be more common than recognized.[4] Gastrointestinal symptoms in patients with SLE are usually mild and most commonly include abdominal pain.[4] In rare cases, severe gastrointestinal involvement of SLE may include enteritis, pancreatitis, peritonitis, protein-losing enteropathy, and intestinal pseudoobstruction.[4] Life-threatening gastrointestinal complications including ischemia, perforation, and infarction.[5] Overall, while less frequent compared to other systems like the skin, joints, and kidneys, gastrointestinal involvement still occurs in 40%–60% of SLE patients.[6]

Inflammatory bowel disease (IBD) on initial presentation commonly includes a combination of symptoms including abdominal pain, diarrhea, weight loss, and anemia due to gastrointestinal blood loss including hematochezia.[7] In addition, SLE enteritis induces inflammation in the small intestine that resembles Crohn's disease (CD), a subset of IBD. Consequently, it can be challenging to differentiate between SLE enteritis and CD during initial presentation.[8] We present the case of an adolescent male hospitalized due to gastrointestinal symptoms that initially raised suspicion of IBD. Further evaluation revealed a diagnosis of SLE with isolated gastrointestinal involvement.

2 | CASE

A 14-year-old male presented to the Emergency Room with a 5-day history of nausea, vomiting, and diarrhea. In the preceding 6 months, he had early satiety, unintentional weight loss of 5 kg, intermittent fevers, and episodes of discoloration and swelling in his lower extremities. Infectious stool PCR studies were significant for both norovirus and giardia infections, and he was admitted for management of his acute gastrointestinal symptoms with supportive care for dehydration which included intravenous fluids. His blood metabolic panel was notable for hyponatremia, hypophosphatemia, hypomagnesemia, hypocalcemia, and hypokalemia. He

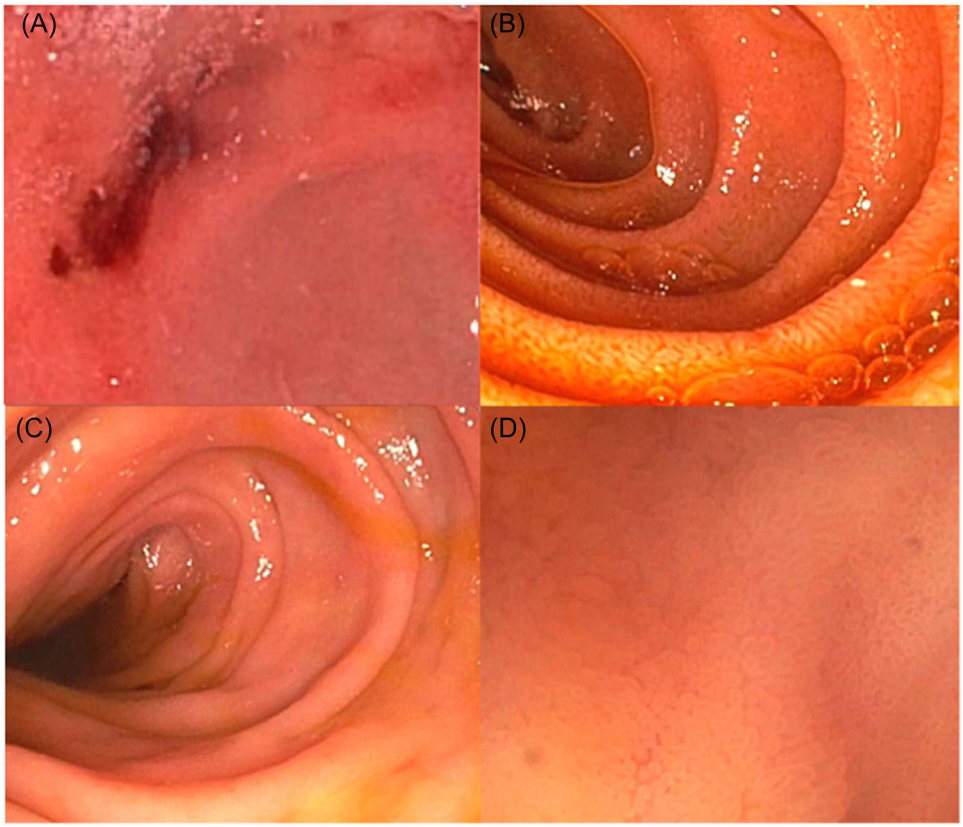

FIGURE 1 Endoscopy images from upper endoscopy (A, B) and colonoscopy (C, D). (A) Notable for a gastric ulcer with adherent clot, erythematous mucosa in the stomach. (B) Normal duodenum. (C) Mild congestion in the colon, and (D) normal terminal ileum.

was managed by supplementing electrolytes and Vitamin B1 (thiamin) with concern for refeeding syndrome in the context of weight loss and low electrolytes. He was diagnosed with iron deficiency anemia and was initiated on oral ferrous sulfate. Blood work was notable for hypoalbuminemia (3.1 g/dL, reference range [RR] 3.8–5.4 g/dL), lymphopenia (absolute lymphocyte count 600/mm^3, RR 1100–4500/mm^3), and monocytosis (absolute monocyte count 1230/mm^3, RR 0–900/mm^3) with normal white blood cell count (Table 1). Laboratory markers of inflammation, C-reactive protein, erythrocyte sedimentation rate (ESR), and fecal calprotectin, were normal. Urinalysis for the exception of 1+ ketones was normal, and negative for protein. After improvement in his acute gastrointestinal symptoms, he was discharged home with outpatient follow-up.

One week after being discharged, the patient experienced a recurrence of nausea, vomiting, and diarrhea, leading him to present for hospital readmission. The ESR was now elevated (68 mm/h, RR 0–15 mm/h) (Table 1). On physical exam, he had diffuse abdominal pain and the remainder of the exam was normal. A computed tomography (CT) scan of the abdomen with intravenous contrast revealed small to moderate ascites and diffuse mural thickening and inflammation involving the terminal ileum (TI), appendix, ileocecal valve, cecum, and rectum. In addition, CT reported a duplex left kidney with duplicate in collecting system, kidneys and bladder were otherwise normal. Due to the patient having clinical symptoms and radiographic findings concerning for IBD, the gastroenterology service was consulted and recommended esophagogastroduodenoscopy and colonoscopy. Key findings from endoscopy included a gastric ulcer with an adherent clot (Forrest Classification IIb), mildly erythematous mucosa throughout the stomach, and congestion in the sigmoid colon. However, the remainder of the colon and TI were normal appearing (Figure 1). Histopathological evaluation of biopsy samples was negative for inflammation. Following endoscopy, the patient developed worsening nausea and nonbloody, nonbilious vomiting refractory to medical therapy. Concern arose for a possible procedural complication of a duodenal hematoma and a repeat abdominal CT was performed that was negative for a duodenal hematoma, but did reveal significant colonic thickening and inflammation consistent with pan-colitis, new severe gastritis and duodenitis, and an increase in moderate-sized peritoneal ascites (Figure 2). In addition, a comb sign was seen (Figure 2C), a nonspecific finding consistent with inflamed mesentery that can be seen in ileocolonic CD; however, not pathognomonic for CD. Interestingly,

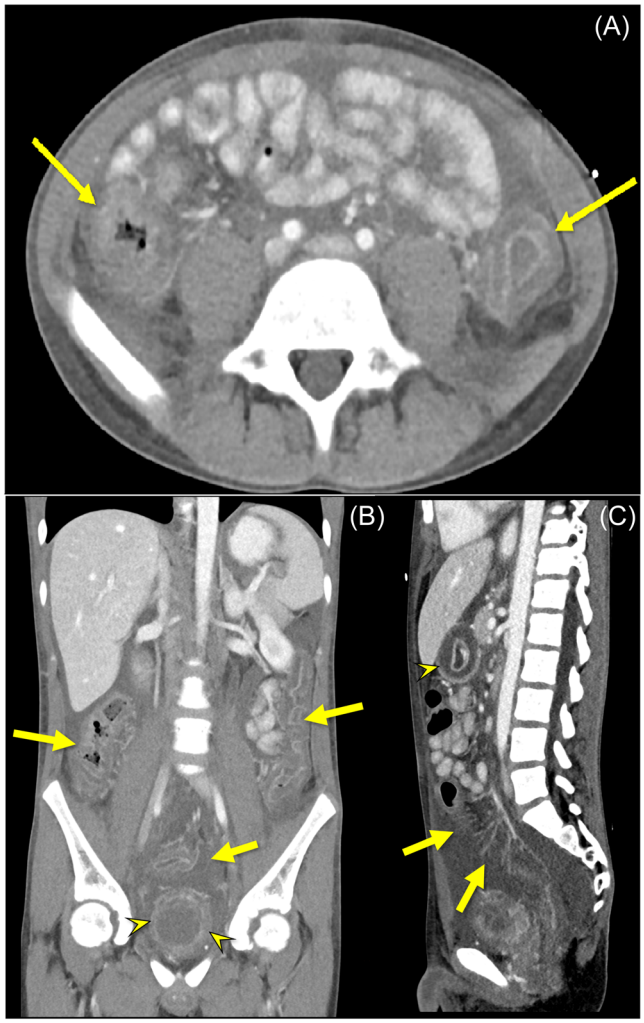

FIGURE 2 Axial, coronal, and sagittal contrast-enhanced CT images obtained as part of a work-up for abdominal symptoms. The CT image panels A–C here were obtained 7 days from the first admission due to worsening nausea and vomiting, and demonstrate significant disease advancement between scans. (A) Axial image at the level of the mid-abdomen shows severe wall thickening, mucosal, and serosal enhancement of the ascending and descending colon (arrows). (B) Coronal image showing wall thickening and mucosal and serosal enhancement in the ascending, descending, and sigmoid colon (arrows). Additionally, bladder wall thickening, and abnormal enhancement is present (arrowheads). (C) Sagittal midline image showing mesenteric hypervascularity—the comb sign—as another sign of bowel inflammation (arrows). Gastric antral thickening and hyperenhancement is seen in cross section (arrowhead). CT, computed tomography.

inflammation in the TI on CT showed interval improvement (from 30 to 5 cm involvement) and new findings of severe cystitis and bilateral hydronephrosis involving the ureters and with no new kidney findings (Figure 2B). To alleviate gastric symptoms, a nasogastric tube was inserted for gastric decompression, leading to rapid resolution of his nausea and vomiting.

Given the patient's gastrointestinal symptoms in the context of normal luminal exam and migratory serositis on CT, the team was concerned about an autoimmune etiology for his symptoms and Rheumatology was consulted. The subsequent serum assessments revealed: positive antinuclear antibodies (ANA) with titer exceeding 1:5120 (normal 1:40 or lower), antismith levels greater than 8.0 AI (RR 0–0.9 AI), antinuclear ribonucleoprotein levels greater than 8 AI (RR 0–0.9 AI), double-stranded DNA antibodies 32 IU/mL (RR 0–9 IU/mL), hypocomplementemia with complement component 3 (C3) levels at 65 mg/dL (RR 83–203 mg/dL) and complement component 4 (C4) levels at 7 mg/dL (RR 16–52 mg/dL), and lymphopenia with absolute lymphocyte count ranging from 406 to 795/mm^3 (RR 1100–4500/mm^3) (Table 1). During this time, the patient also developed a faint malar rash. SLE was diagnosed in accordance with the 2019 European League Against Rheumatism (EULAR)/American College of Rheumatology criteria which include an entry criterion of an ANA titer greater than 1:80 with additive criteria that provide a total score (SLE diagnosed with a score of 10 or more if entry criterion fulfilled). The combination of laboratory findings (leukopenia, low complement proteins, and SLE-specific antibodies), coupled with clinical criteria of serositis on imaging and presence of a new malar rash, were consistent with a diagnosis of SLE (scoring greater than 10).[7] Treatment was initiated with intravenous methylprednisolone, transitioned to an oral prednisone taper, combined with hydroxychloroquine and azathioprine for steroid sparing therapy. Within 3 days, there was a reduction in symptoms and ability to tolerate oral feeds, and the patient was discharged home with outpatient follow-up.

3 | DISCUSSION

Our patient presented with gastrointestinal manifestation of undiagnosed SLE which mimicked IBD, including gastrointestinal symptoms and imaging concerning for IBD though not exclusive to IBD. Gastrointestinal clinical presentations of SLE are uncommon relative to other presentations. There are rare cases of SLE enteritis masquerading as IBD and even rarer coexistence of both diseases in the same patient.[9–15] In SLE enteritis and patients with SLE who develop IBD, cases have been reported in mostly adult females presenting with nonspecific gastrointestinal symptoms such as abdominal pain, nausea, vomiting, and diarrhea. In SLE enteritis, CT demonstrates nonspecific findings of bowel wall inflammation, and endoscopy findings may demonstrate nonspecific findings such as congestion and ulcers that were seen in our patient. In cases where biopsy findings are not diagnostic for IBD, it is important to consider other causes of gastrointestinal symptoms. This is the case for our patient who would meet the criteria for SLE enteritis and based on endoscopy does not have CD.

Promptly identifying SLE with gastrointestinal involvement is critical for initiation of appropriate therapies and preventing progression to significant life-threatening complications. Symptomatic overlap with IBD may delay diagnosis as work-up is geared toward primary gastrointestinal illness. Both SLE and IBD may show inflammatory bowel wall involvement on cross-sectional imaging creating further diagnostic confusion. Endoscopic evaluation may be required to rule out IBD and may further delay work-up for SLE, as it did in our patient. This case demonstrates the importance of pursuing a broad differential diagnosis through multispecialty collaboration.

In summary, we present a case of an adolescent male with primarily gastrointestinal symptoms who had a negative endoscopic work-up for IBD and was diagnosed with SLE. The patient being male and having a less typical presentation of SLE clinically led to a diagnostic delay. This case serves as a reminder to consider SLE as an alternative diagnosis in patients presenting with gastrointestinal symptoms and radiographic findings of bowel inflammation not specific for IBD. This should be particularly considered when there are other suggestive findings of SLE (e.g., cytopenias, renal involvement with proteinuria, rashes, oral ulcers, joint pain and swelling, and serositis). In such cases, it may expedite the diagnosis to perform SLE evaluation simultaneously with IBD evaluation.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

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