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Case Report

Conservative Management Achieving Durable Clinical and Radiologic Remission in Adolescent PSC-UC Overlap Without Biologic Therapy

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Abstract

Pediatric primary sclerosing cholangitis (PSC) associated with ulcerative colitis (UC) presents unique diagnostic and therapeutic challenges. Conventional management frequently involves biologic agents due to disease severity.

We present a 17-year-old male diagnosed with PSC-UC overlap syndrome who achieved sustained clinical and radiologic remission using conservative therapy comprising mesalamine, corticosteroids, and microbiome modulation with oral vancomycin. Despite initial concerns of disease progression indicated by elevated liver enzymes, adherence to conservative therapy led to substantial clinical improvement without escalation to biologics. Magnetic resonance cholangiopancreatography (MRCP) confirmed radiologic remission, and subsequent follow-up revealed consistent clinical stability and weight gain after addressing medication adherence and supplement misuse.

This case underscores the possibility of achieving durable remission in adolescent PSC-UC overlap through early diagnosis, adherence to conservative therapy, and close multidisciplinary monitoring, thus potentially avoiding biologic-associated risks.

Introduction

Primary sclerosing cholangitis (PSC) is a chronic cholestatic liver disease characterized by progressive inflammation and fibrosis of the bile ducts, frequently associated with ulcerative colitis (UC). The incidence of primary sclerosing cholangitis-ulcerative colitis (PSC-UC) overlap in pediatric patients is best described by the proportion of children with PSC who also have IBD, particularly UC. According to the American Association for the Study of Liver Diseases, IBD is present in approximately 63–80% of pediatric PSC cases, and more than two-thirds of these cases are ulcerative colitis, making the overlap of PSC-UC the most common phenotype in this population.[1] Pediatric PSC remains rare and presents distinct management challenges due to its variable progression and limited therapeutic guidelines. Although biologic therapies are increasingly used, they pose significant risks, including immunosuppression and high costs. Conservative management, including mesalamine, corticosteroids, and microbiota-directed therapies such as oral vancomycin, presents an attractive alternative. This report highlights successful conservative management of PSC-UC overlap in adolescence, emphasizing therapeutic potential and clinical outcomes without biologics.

Case Presentation

A 17-year-old Caucasian male presented with symptoms suggestive of an ulcerative colitis flare, including significant weight loss, mild abdominal discomfort, and two episodes of non-bloody diarrhea per day. Initially diagnosed with ulcerative pancolitis in December 2022, he subsequently received a PSC diagnosis in January 2023 after MRCP demonstrated typical bile duct changes and significantly elevated gamma-glutamyl transferase (GGT) levels at 701 U/L (Figure 1). Treatment consisted of high-dose mesalamine (4.8g daily), oral vancomycin (250mg four times daily), and corticosteroids (prednisone taper starting at 40mg).

Clinical improvement was initially achieved, as evidenced by normalized GGT levels (76 U/L) and radiologic remission on follow-up MRCP. However, adherence issues arose from unsupervised intermittent prednisone use. Additionally, the patient consumed bodybuilding supplements (approximately 5 grams of creatine monohydrate) daily, leading to renal concerns reflected by elevated creatinine levels (1.18 mg/dL) during subsequent evaluation. Upon admission in January 2025, extensive counseling sessions addressing proper steroid use, supplement moderation, and medication adherence significantly improved patient compliance and resolved renal concerns, with creatinine levels decreasing to 1.09 mg/dL. The patient maintained stable remission, thereafter, confirmed clinically and by follow-up colonoscopy.

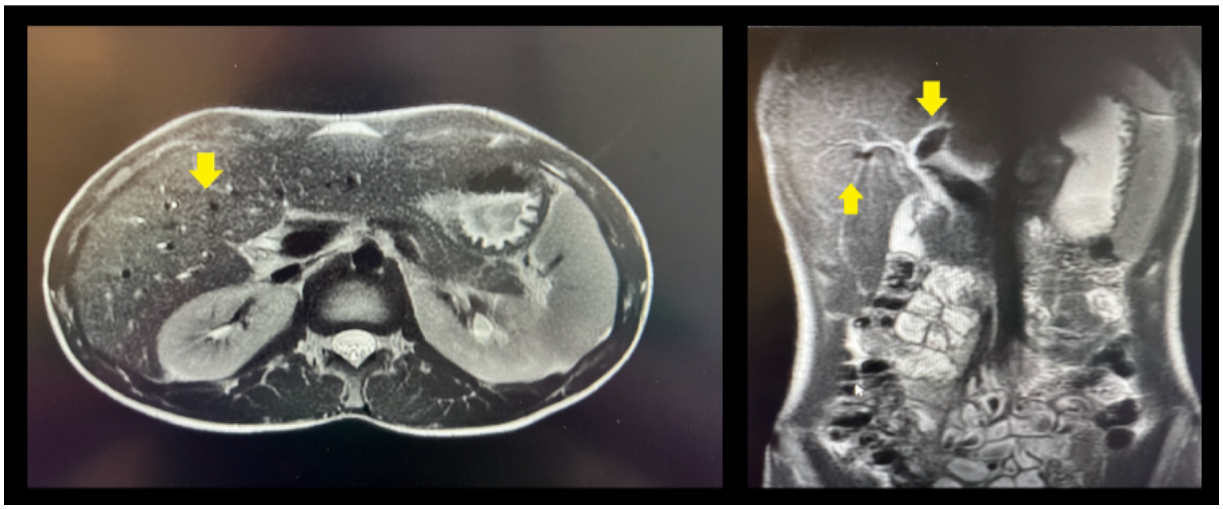

Figure 1. MR Enterography in a Patient With PSC–UC Overlap.

Axial (left) and coronal (right) T2-weighted MR images demonstrate mild beading of the central intrahepatic and extrahepatic bile ducts (arrows), with the common bile duct measuring up to 0.5 cm in diameter. Subtle wall thickening of the common bile duct is suspected. The gallbladder appears normal.

Date	Clinical Event	Management	Outcome
Dec 2022	Diagnosis of ulcerative pancolitis	Mesalamine 1.2g/day	Initial partial response
Jan 2023	PSC diagnosis via MRCP, GGT elevated (701 U/L)	Mesalamine 4.8g/day, prednisone taper, oral vancomycin 250mg QID	Clinical and biochemical improvement
Nov 2023	Follow-up MRCP, GGT normalized (76 U/L)	Continued conservative therapy	Radiologic remission
Jan 2025	Presentation with weight loss, abdominal pain, renal impairment (creatinine 1.18 mg/dL), misuse of steroids and creatine supplements	Education on medication adherence, steroid use, supplement moderation	Improved adherence, renal recovery, clinical improvement
Feb 2025	Follow-up colonoscopy	Continued conservative therapy	Endoscopic remission confirmed

Table 1. Summary of Clinical Course, Laboratory Trends, and Key Interventions.

This table outlines the patient's diagnostic timeline, laboratory changes, treatment interventions, and clinical outcomes throughout the course of PSC–UC overlap management. It highlights biochemical improvement following conservative therapy, the impact of adherence counseling, and sustained remission without the need for biologic therapy.

Discussion

This case illustrates a successful conservative therapeutic approach in managing pediatric PSC-UC overlap, a condition that typically poses significant challenges due to the complex interplay between hepatic and gastrointestinal inflammatory processes. Prior literature has demonstrated that the microbiota in PSC-UC is distinct from that of non-disease controls, PSC, or IBD phenotypes, and these changes may trigger changes in bile acid homeostasis and the inflammatory cycle that eventually causes bile duct fibrosis and strictures [2, 3]. Oral vancomycin played a central role in this conservative strategy by modulating the gut microbiome and reducing pathogenic bacterial populations, which may help reduce proinflammatory secondary bile acids,

and exerting immunomodulatory effects by decreased production of the inflammatory cytokine TNF- α and increased production of the regulatory TGF- β 4-6. This microbiota-targeted approach aligns well with current understanding of the pathophysiology of PSC-UC, where dysbiosis and immune dysregulation are key components driving disease progression [2, 3, 7].

The patient's adherence to therapy emerged as a crucial factor in achieving and maintaining remission. Notably, this case highlights significant adherence challenges, including unsupervised steroid usage and misuse of bodybuilding supplements. While creatine monohydrate is recognized as safe in adult populations, there is a lack of placebo-controlled, blinded RCTs demonstrating its safety in the pediatric and pediatric chronic-disease populations [8]. Such scenarios underscore the importance of robust patient and caregiver education to prevent medication misuse and ensure proper adherence to prescribed therapies [5]. Education and multidisciplinary interventions in managing chronic pediatric illnesses have been shown to enhance therapeutic outcomes significantly, emphasizing the need for thorough discussions about medication regimens, side effects, and lifestyle modifications [6, 9, 10].

The avoidance of biologic therapy in this patient offers important clinical insights. While biologics represent potent therapeutic options, their associated risks—including increased susceptibility to infections, immune suppression, and substantial financial and psychological burdens—necessitate careful consideration, particularly in pediatric patients. Successfully managing pediatric PSC-UC with conservative therapy may mitigate these risks, improve quality of life, and promote better long-term outcomes [6].

Conclusion

This case reinforces the potential efficacy of individualized conservative management, combining microbiome-directed therapies, corticosteroids, and patient adherence education. It emphasizes the critical role of a personalized, multidisciplinary approach to pediatric PSC-UC management, potentially avoiding biologic therapies and improving patient outcomes. Informed consent was obtained from the patient and his father regarding publication of this case.

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