Tofacitinib for Biologic-Experienced Hospitalized Patients With Acute Severe Ulcerative Colitis: A Retrospective Case-Control Study

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BACKGROUND: **Despite rescue therapy, more than 30% of patients with acute severe ulcerative colitis (ASUC) require colectomy. Tofacitinib is a rapidly acting Janus kinase inhibitor with proven efficacy in ulcerative colitis. Tofacitinib may provide additional means for preventing colectomy in patients with ASUC.**

METHODS: **A retrospective case-control study was performed evaluating the efficacy of tofacitinib induction in biologic-experienced patients admitted with ASUC requiring intravenous corticosteroids. Tofacitinib patients were matched 1:3 to controls according to gender and date of admission. Using Cox regression adjusted for disease severity, we estimated the 90-day risk of colectomy. Rates of complications and steroid dependence were examined as secondary outcomes.**

RESULTS: **Forty patients who received tofacitinib were matched 1:3 to controls (n = 113). Tofacitinib was protective against colectomy at 90 days compared with matched controls (hazard ratio [HR], 0.28, 95% confidence interval [CI], 0.10–0.81; $P = .018$). When stratifying according to treatment dose, 10 mg three times daily (HR, 0.11; 95% CI, 0.02–0.56; $P = .008$) was protective, whereas 10 mg twice daily was not significantly protective (HR, 0.66; 95% CI, 0.21–2.09; $P = .5$). Rate of complications and steroid dependence were similar between tofacitinib and controls.**

CONCLUSIONS: **Tofacitinib with concomitant intravenous corticosteroids may be an effective induction strategy in biologic-experienced patients hospitalized with ASUC. Prospective trials are needed to identify the safety, optimal dose, frequency, and duration of tofacitinib for ASUC.**

Keywords: Ulcerative Colitis; Tofacitinib; Colectomy.

As many as 25% of patients with ulcerative colitis (UC) will be hospitalized with an episode of acute severe ulcerative colitis (ASUC).[1] The current standard of care for an episode of ASUC is rapid induction with intravenous (IV) corticosteroids; however, 30% of patients will not respond to corticosteroids alone.[2] Infliximab or cyclosporine rescue therapy has been shown to reduce rates of colectomy further.[3–5] Various rescue strategies have been explored, including accelerated induction infliximab therapy, which have further decreased the need for colectomy in patients hospitalized with ASUC.[6,7] Because of these data, there still exists a significant rate of treatment failure leading to colectomy. This highlights the need for more effective therapies for patients admitted with ASUC.

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Abbreviations used in this paper: ASUC, acute severe ulcerative colitis; BID, twice daily; CI, confidence interval; FDA, Food and Drug Administration; HR, hazard ratio; IV, intravenous; JAK, Janus kinase; TID, three times daily; UC, ulcerative colitis.

1542-3565/$36.00
https://doi.org/10.1016/j.cgh.2021.05.038

Tofacitinib is a rapidly acting, oral, small-molecule Janus kinase (JAK) inhibitor that was recently approved by the Food and Drug Administration (FDA) for induction and maintenance in moderate to severe UC.[8,9] Tofacitinib has demonstrated promising efficacy as an induction therapy for patients hospitalized with ASUC; however, these data have been limited to several small uncontrolled case series.[10,11] Several characteristics make tofacitinib an attractive candidate for inpatient induction therapy. First, it is rapidly absorbed (peak plasma concentration is seen at 1 hour) and can produce rapid clinical improvements in outpatient UC by day 3 of oral therapy.[12] It is also rapidly cleared with a very short half-life (approximately 3.2 hours), which has a theoretical benefit of minimizing intraoperative and postoperative complications because tofacitinib would be cleared before colectomy even in urgent cases.[13] As a small molecule, tofacitinib is less susceptible to drug loss associated with hypoalbuminemia and colonic protein loss compared with biologic medications.[14,15] In addition, there is a growing population of patients who have already failed infliximab therapy and need other inpatient treatment options. Since the FDA approval for UC in May 2018, tofacitinib is readily available for inpatients. Last, a short trial of inpatient tofacitinib is inexpensive when compared with inpatient administration of biologic therapy.

We present a retrospective case-control study in biologic-experienced patients hospitalized with ASUC and initiated on tofacitinib compared with sex- and date-matched controls to determine the risk of colectomy, rate of complications, and rate of steroid dependence for each group.

What You Need to Know

Background

Patients hospitalized with acute severe ulcerative colitis have limited effective treatment options and are at a very high risk for treatment failure, requiring an unplanned and irreversible colectomy.

Findings

Tofacitinib was protective against colectomy at 90 days compared with matched controls. This benefit was only seen in patients treated with the off-label, high-intensity 10 mg three times daily dose.

Implications for patient care

Off-label, high-intensity tofacitinib with concomitant intravenous corticosteroids represents a novel therapeutic option for biologic-experienced patients hospitalized with acute severe ulcerative colitis predicted to fail medical management.

Methods

Study Population

We performed a retrospective chart review of patients older than the age of 18 hospitalized with ASUC between January 2010 and December 2020. Patients were identified through a query of the electronic medical records of the University of Michigan for hospitalized patients with UC on the basis of the International Classification of Diseases-9 and -10 codes who received IV corticosteroids. Medical charts were reviewed to ensure the diagnosis of UC was accurate and other inclusion criteria were met (JAB, JS, MD).

ASUC was defined by the need for IV corticosteroids and meeting Truelove and Witts criteria or having laboratory or endoscopic features of severe disease.[16,17] Our study group was composed of UC patients previously treated with biologic therapy (biologic-experienced) and initiated on tofacitinib as an inpatient. Patients were not eligible if they were on tofacitinib before admission or received infliximab followed by tofacitinib during the same hospitalization. Tofacitinib was administered at either standard induction doses of 10 mg twice daily (BID) for the duration of the hospitalization or at a high-intensity, off-label dose of 10 mg three times daily (TID) for 9 doses followed by 10 mg twice daily.[8,11] A dose of 10 mg TID was chosen on the basis of the short half-life (~3.2 hours) and because of the reported efficacy of 15 mg BID in phase 2 trial.[18] Dose selection was based on patient and provider comfort and preference. Patients in the tofacitinib group were matched randomly 1:3 to controls according to gender and date of admission to account for variations in practice over time and variations in inpatient provider experience and comfort with ASUC management and tofacitinib prescribing. Controls were excluded if the patient was not admitted for a UC exacerbation (eg, received IV corticosteroids for a non-UC indication), previously had a colectomy, or were included in our study group. Patient demographics, disease characteristics, hospital data, clinical course, as well as follow-up were manually extracted by electronic medical record (JAB, JS, MD). The University of Michigan Institutional Review Board approved this study.

Statistical Analysis

Our primary outcomes were the colectomy risk within 90 days of the initial hospitalization date. Time points were selected according to prior landmark clinical trials.[3,4] We used Kaplan-Meier plots and Cox proportional hazards regression to compare the risk of colectomy between the tofacitinib group and controls. The proportional hazards assumption was checked using Schoenfeld residuals, and no violations were identified. Adjusted hazard ratios (HRs) and 95% confidence intervals (CIs) were reported, with HR >1 indicating increased colectomy risk and HR <1 indicating reduced colectomy risk in individuals initiated on tofacitinib

compared with controls groups. Missing variables were imputed by the random forest method using the *missforest* package in R.[19] Models were adjusted for the severity of UC at presentation by the simultaneous inclusion of well-established predictors of colectomy[1,16,17,20,21] and sequential elimination of predictors not significantly associated with our outcome of interest. Multiple models were evaluated, and various interactions were tested. A secondary analysis was performed comparing complications, infections, unplanned readmissions (included all readmissions regardless of the indication if it was not planned), as well as the rate of steroid dependence at 90 days. Steroid dependence was defined as either being on any dose of corticosteroids at 90 days or requiring an increase or reinitiation of corticosteroids during the 90 days of follow-up. Complications, unplanned readmissions, and steroid dependence rates were assessed in patients who did not undergo colectomy within 90 days of follow-up. Of the patients who had undergone colectomy, postsurgical infection rates were assessed within 90 days of follow-up. Baseline characteristics and secondary outcomes were compared by using analysis of variance for continuous variables and χ^2 test for categorical variables. Statistical significance was considered if $P < .05$ (two-tailed). All analyses were performed using R version 3.6.2 (R Foundation for Statistical Computing, Vienna, Austria).

Results

Study Population

Between 2010 and December 2020 there were 59 patients who received tofacitinib in the hospital. Overall, 19 patients were excluded from further evaluation (10 received tofacitinib before index admission, 4 were biologic-naive before index admission, 2 patients did not carry a diagnosis of UC colitis, and 1 received infliximab rescue before tofacitinib therapy during the same admission), thus resulting in 40 patients with ASUC in the tofacitinib group who met our eligibility criteria (Figure 1). Eligible tofacitinib patients were matched approximately 1:3 to controls. Sixty-six patients were excluded from the control group (final n = 113) because of prior tofacitinib use or being included in our tofacitinib group (n = 25), admission unrelated to an UC exacerbation (n = 21), diagnosis of a non-UC colitis (n = 15), or for having a colectomy before admission (n = 5).

Participant Characteristics

A comparison of baseline characteristics of patients in the tofacitinib group and control group is provided in Table 1. Of the 153 patients included, 63% met Truelove and Witts criteria, and the remainder met laboratory or endoscopic features of severe disease. Age (34.41 vs 38.42 years), sex (60.0% male vs 51.3% female), disease duration (10.35 vs 8.41 years), and colitis extent (proctitis, 2.5% vs 0.9%; left-sided colitis, 20% vs 28.6%; extensive colitis, 77.5% vs 70.5%) were similar among patients in the tofacitinib and control groups, respectively. Notable differences in baseline characteristics included a higher proportion of prior biologic use (100% vs 41.5%), higher duration of prior corticosteroid use (50.50 vs 9.12 days), and lower proportion of outside hospital transfers (3.2% vs 6.2%) in the tofacitinib group compared with the control group. Most of these factors are predictive of worse outcomes in the tofacitinib group before covariate adjustment. Patients in both groups received concomitant IV corticosteroids (methylprednisolone 15 mg every 6 hours) per the local standard of care for treatment of ASUC.[22] Of note, 2 patients (1.8%) in the control group received cyclosporine rescue, and 43 patients (38.1%) in the control group received infliximab rescue, of whom 13 (11.5%) received accelerated infliximab rescue with 2 doses of infliximab before the standard day 14 dose. None of the patients in the tofacitinib group received rescue with infliximab or cyclosporine. Of the patients in the tofacitinib group, 16 patients (40%) received tofacitinib 10 mg BID, and 24 patients (60%) received tofacitinib 10 mg TID. Mean length of stay was 9.35 and 7.01 days in the tofacitinib group compared with the control group.

Risk of Colectomy

Six patients (15.0%) and 23 patients (20.4%) underwent a colectomy within 90 days in the tofacitinib group compared with the control group, respectively (Supplementary Table 1). Several predictors of 90-day colectomy were identified in bivariable analysis (Supplementary Table 2). In a multivariate model, the 90-day risk of colectomy was significantly lower in the tofacitinib group compared with controls (HR, 0.28; 95% CI, 0.10–0.81; $P = .018$). The albumin nadir (HR, 0.27; 95% CI, 0.12–0.59; $P = .001$), number of failed targeted therapies (HR, 1.61; 95% CI, 1.13–2.29, $P = .009$), colonic dilation (HR, 4.13; 95% CI, 1.39–12.3; $P = .011$), and endoscopic Mayo score (HR, 6.28; 95% CI, 1.85–21.4; $P = .003$) were identified as significant covariate predictors of colectomy at 90 days. Our findings are presented visually (Figure 2) using adjusted Kaplan–Meier curves showing the colectomy avoidance rate and time to colectomy (limited to 90-day follow-up). Multivariate analysis evaluating the effect of tofacitinib dose as a categorical variable (none, 10 mg BID, 10 mg TID) demonstrated that tofacitinib was significantly protective against colectomy at a dose of 10 mg TID (HR, 0.11; 95% CI, 0.02–0.56; $P = .008$) but not significantly protective against colectomy at a dose of 10 mg BID (HR, 0.66; 95% CI, 0.21–2.09; $P = .5$) at 90 days (Supplementary Table 3). This is presented visually

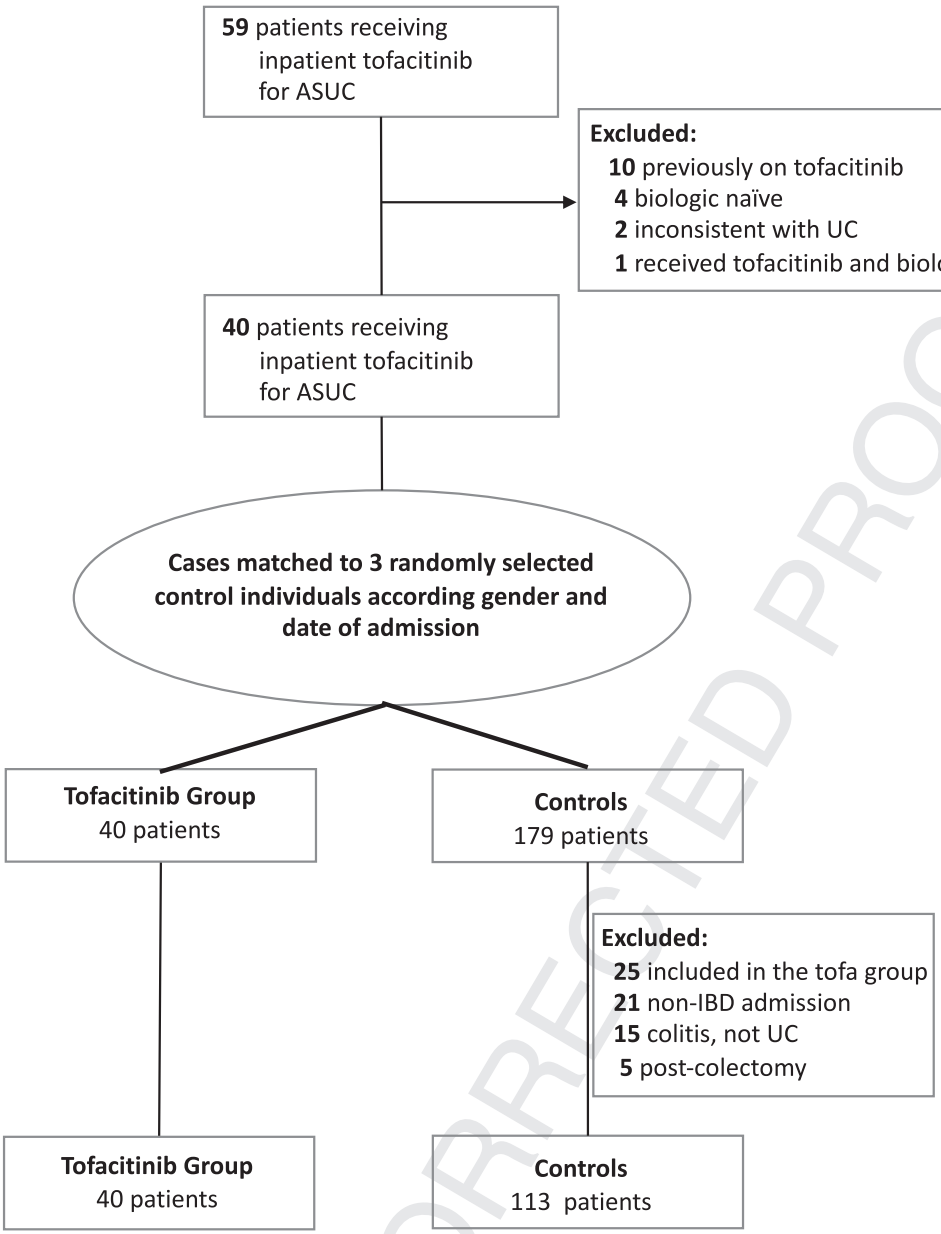

Figure 1. Patient flow diagram. ASUC, acute severe ulcerative colitis; IBD, inflammatory bowel disease; UC, ulcerative colitis.

(Figure 3) using adjusted Kaplan–Meier curves showing the colectomy avoidance rate and time to colectomy for tofacitinib 10 mg BID compared with tofacitinib 10 mg TID compared with controls.

Risk of Complications, Unplanned Readmission, and Steroid Dependence

No significant differences in the rates of venous thromboembolic event, infection, or cardiovascular event were seen in the tofacitinib group compared with controls during the induction phase of drug administration or within 90 days of reported follow-up (Table 3). This included bacterial infections, opportunistic infections, herpes zoster infection (shingles), and coronavirus disease 2019 in patients where follow-up fell after March 1, 2020 (the date of the first recorded coronavirus disease 2019 case in Michigan). Of note, 0 of 6 patients in the tofacitinib group and 9 of 23 patients (39.1%) in the control groups who underwent colectomy within 90 days of index hospitalization experienced a postoperative infection. Nine patients (26.5%) in the tofacitinib group and 16 patients (17.8%) in the control group experienced an unplanned readmission within 90 days of reported follow-up. In addition, 17 patients (50.0%) in the tofacitinib group and 28 patients (31.1%) in the control group were on steroids or required an increase or reinitiation of steroid during the 90 days of follow-up. Of note, only 7 patients (20.6%) and 14 patients (15.6%) received pneumocystis pneumonia prophylaxis and 0 patients received anticoagulation prophylaxis in the tofacitinib group compared with the control group, respectively. Of the 34 patients managed medically, 30 patients (88%) remained on tofacitinib at 90 days. The reason

Table 1. Participant Characteristics

	Tofacitinib (N = 40)	Controls (N = 113)
Age, *y*	34.41	38.42
Female	24 (60.0%)	58 (51.3%)
Race		
White	36 (90.0%)	100 (88.5%)
Black	3 (7.5%)	5 (4.4%)
Other	1 (2.5%)	8 (7.1%)
Duration IBD, *y*	10.35	8.41
Colitis extent		
Proctitis	1 (2.5%)	1 (0.9%)
Left-sided colitis	8 (20.0%)	32 (28.6%)
Extensive colitis	31 (77.5%)	79 (70.5%)
Prior biologic use	40 (100.0%)	44 (38.9%)
Failed prior targeted therapies		
One	13 (32.5%)	22 (19.5%)
Two	21 (52.5%)	11 (9.7%)
Three	5 (12.5%)	10 (8.8%)
Four	1 (2.5%)	1 (0.9%)
Prior infliximab failure	34 (85.0%)	31 (27.4%)
Prior adalimumab failure	16 (40.0%)	22 (19.5%)
Prior golimumab failure	2 (5.0%)	1 (0.9%)
Prior vedolizumab failure	21 (52.5%)	21 (18.6%)
Prior ustekinumab failure	1 (2.5%)	1 (0.9%)
Prior tofacitinib failure	0 (0.0%)	2 (1.8%)
Outside hospital transfer	1 (2.6%)	7 (6.2%)
Duration steroids, *days*	50.50	9.12
Truelove Witts score	2.75	2.83
C-reactive protein (*mg/dL*)	6.29	7.71
Albumin (*g/dL*)	3.40	3.28
Admission hemoglobin (*g/dL*)	11.71	12.07
Colonic dilation		6 (5.7%)
Endoscopic Mayo Score		
Mayo 1	1 (2.6%)	5 (5.0%)
Mayo 2	10 (25.6%)	40 (39.6%)
Mayo 3	28 (71.8%)	56 (55.4%)
Clostridium difficile infection	6 (15.4%)	10 (8.8%)
Cytomegalovirus colitis	3 (8.1%)	1 (1.0%)
Rescue cyclosporine	N/A	2 (1.8%)
Rescue infliximab	N/A	43 (38.1%)
Accelerated rescue infliximab	N/A	13 (11.5%)
Tofacitinib dose		
10 mg BID	16 (40.0%)	N/A
10 mg TID	24 (60.0%)	N/A
Length of stay, *days*	9.35	7.01
Follow-up, *y*	0.83	0.99

NOTE. In 1 patient extent was unknown. In 13 patients endoscopic data were not available.
BID, twice daily; IBD, inflammatory bowel disease; TID, three times daily.

for discontinuation was related to insurance (25%), an adverse event (25%), and loss of response (25%), with 1 patient lost to follow-up (25%) preventing us from determining tofacitinib status.

Discussion

This is the largest case-control study to evaluate the Q8 efficacy and safety of rapid acting JAK inhibitor therapy for ASUC in comparison with matched controls. Our findings suggest that tofacitinib may represent a novel therapeutic augmentation option for biologic-experienced patients hospitalized with ASUC and likely to fail first-line medical management.

In this study we found that inpatient tofacitinib induction therapy, in addition to IV corticosteroids, was associated with a lower risk of colectomy at 90 days compared with controls when adjusted for disease severity covariables. In subgroup analysis, this benefit was only statistically significant at tofacitinib doses of 10 mg TID but not at doses of 10 mg BID. However, the number of patients was smaller in each subgroup, which reduced statistical power. The additional risk factors included in our model are well-established as predictors of disease severity and colectomy in hospitalized patients with ASUC.[1,16,20,21]

This finding has important implications, because the majority of the patients in the tofacitinib group would have been advised to undergo colectomy on the basis of admission characteristics, prior exposure to biologics, and lack of available inpatient rescue options. On the basis of admission characteristics, the patients included in the study would have had a very high likelihood of failing medical management with corticosteroids alone. This is supported by the observation that 56 patients (39.8%) in the control group required rescue therapy with either infliximab or cyclosporine. These results were not adjusted for the use of rescue therapy, because this was not considered an option after tofacitinib augmentation.

Although this study was not powered to evaluate safety, we did not observe any increased risk of infection, venous thromboembolic events, or cardiovascular events with inpatient tofacitinib. Interestingly, there was a nonsignificant decrease in the incidence of postoperative infections in the tofacitinib group compared with controls.

In addition, there was a nonsignificant increase in the rate of steroid dependence in the tofacitinib group compared with controls (50% vs 31.1%, $P = .051$). Importantly, 50% of these patients were able to wean off steroids after inpatient tofacitinib induction. Although standard post-discharge steroid tapers may extend to around 90 days, therefore inflating the rate of steroid dependence in both groups, this remains an important clinical outcome for long-term efficacy of inpatient ASUC management.

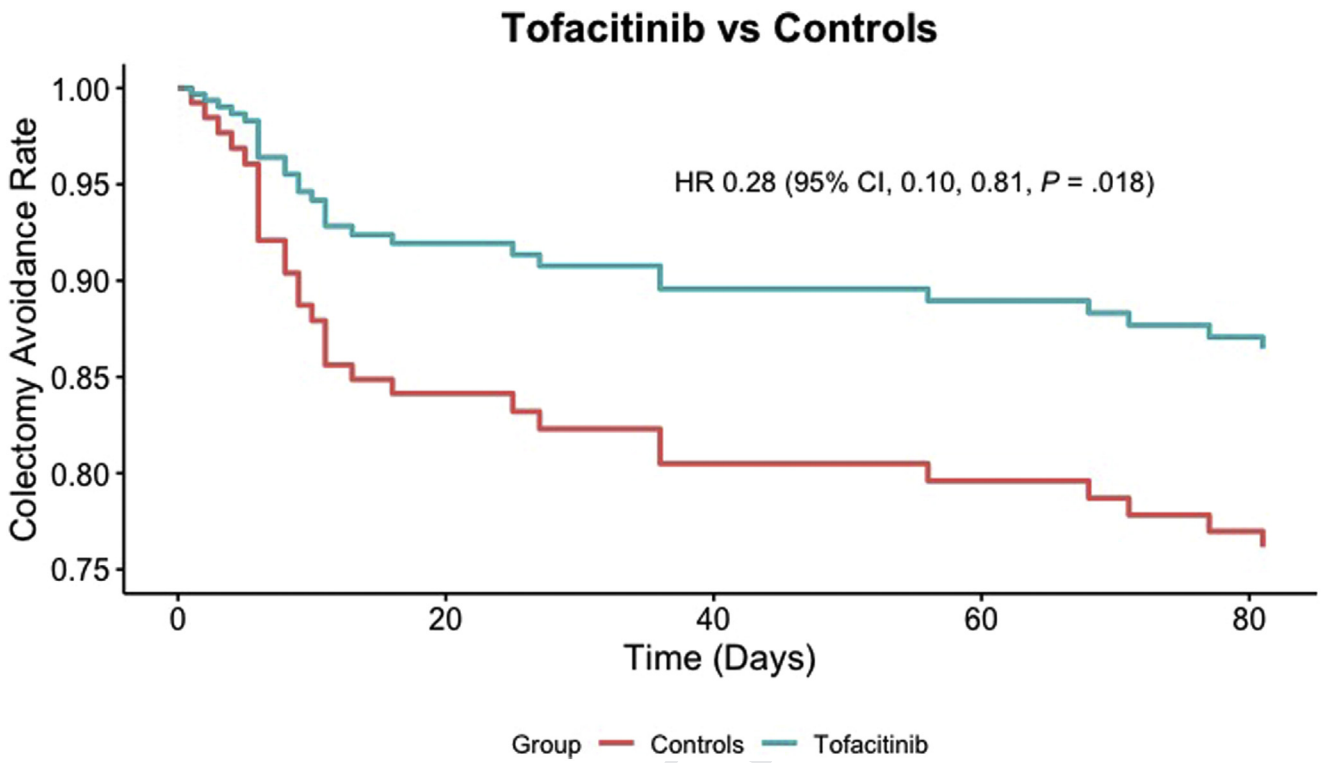

Figure 2. Risk of colectomy at 90 days. CI, confidence interval; HR, hazard ratio.

Tofacitinib may represent a cost-effective treatment approach. When comparing drug costs alone at our center, tofacitinib costs $1444 for nine 10-mg doses ($160 per 10-mg dose), whereas Inflectra costs $3220 for a single infusion of 700 mg ($460 per 100 mg at a dose of 10 mg/kg in a 70-kg individual). These estimates do not factor in the potential cost reduction associated with decreased rates of emergency surgery as seen in tofacitinib group.

This study represents the current best evidence for the use of tofacitinib in biologic-experienced patients with ASUC. Previously, phase II and phase III clinical

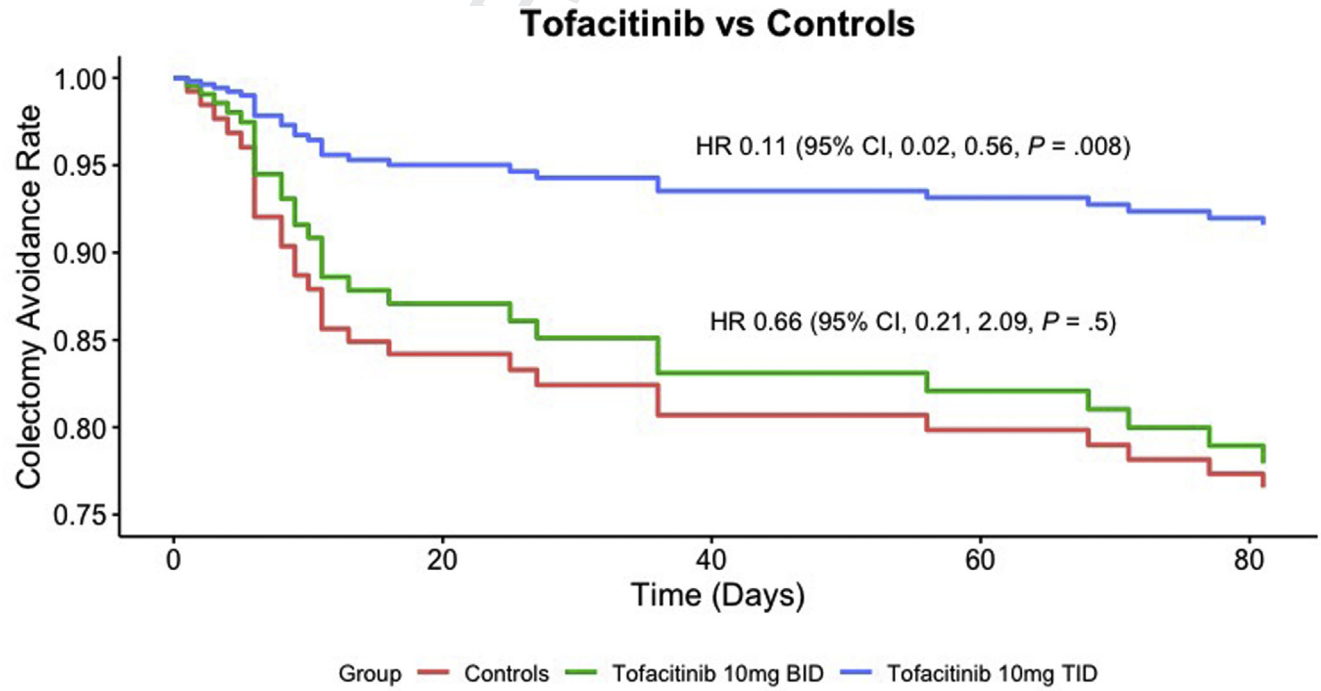

Figure 3. Risk of colectomy at 90 days according to tofacitinib dosing frequency. BID, twice daily; CI, confidence interval; HR, hazard ratio; TID, three times daily.

trials evaluated the efficacy of tofacitinib for moderate to severe outpatient UC; however, these trials did not include patients with ASUC. Up until now, we have relied on small, uncontrolled, case series to guide management of our sickest patients hospitalized with ASUC and at high risk for requiring urgent surgical rescue for uncontrolled disease.

The major strength of our study is the controlled design. This study compares inpatient tofacitinib induction with matched controls. Although the study is likely to be subject to confounding by indication, with sicker patients offered tofacitinib, we accounted for this by adjusting for severity by including several previously validated covariate predictors of colectomy. By not including biologic-naive patients or patients who received infliximab rescue followed by tofacitinib during the same admission, we were able to exclude patients who were deemed highly likely to fail well-studied conventional rescue strategies, causing the provider to bypass infliximab or cyclosporine rescue. In addition, by matching according to date of admission we were able to account for provider variations in subspecialty expertise, experience, and comfort using high-dose tofacitinib for ASUC.

One of the major limitations to our study is the relatively small size of our tofacitinib cohort, reducing our ability to identify small differences in efficacy and safety. There may be some lead-in effect from the tofacitinib group's outpatient regimen, where some of the benefit observed may be due to biologic administration several weeks before the index admission. We do not expect this to be major contributor to our findings, because the majority of patients in the tofacitinib group were failing their outpatient regimen, necessitating their admission. In addition, our study findings may not be generalizable to other centers because the data are derived from a single large tertiary care center. Because of the nonrandomized nature of our study, we cannot directly attribute the reduced rates of colectomy to tofacitinib.

Despite these limitations, this study raises the possibility that tofacitinib induction at 10 mg TID for 9 doses in addition to IV corticosteroids may be an effective therapeutic strategy for the treatment of high-risk biologic-experienced patients admitted with ASUC. Tofacitinib is an attractive therapeutic option for inpatient ASUC because of its rapid onset, rapid clearance, decreased susceptibility to colonic loss, widespread availability, and lower costs compared with infliximab rescue. With an attractive safety profile when compared with corticosteroids, tofacitinib monotherapy might even be a future induction strategy for flares in UC patients in place of corticosteroids.[23–25]

In conclusion, tofacitinib 10 mg TID for 9 doses may be an effective and safe induction strategy in addition to IV corticosteroids for biologic-experienced patients admitted with ASUC. Larger, prospective, randomized controlled trials are needed to further identify the safety, optimal dose, dosing frequency, and duration of JAK inhibitor therapy in ASUC.

Table 2. Risk of Colectomy at 90 Days

	HR	95% CI	*P* value
Tofacitinib	0.28	0.10–0.81	**.018**
Albumin (*g/dL*)	0.27	0.12–0.59	**.001**
No. of failed targeted therapies	1.61	1.13–2.29	**.009**
Colonic dilation	4.13	1.39–12.3	**.011**
Endoscopic Mayo Score	6.28	1.85–21.4	**.003**

CI, confidence interval; HR, hazard ratio.

Table 3. Ninety-Day Complication and Steroid Dependence Rates

	Tofacitinib (N = 34[a])	Contemporary control (N = 90[a])	*P* value
VTE	1 (2.9%)	1 (1.1%)	.470
Any infection	8 (23.5%)	11 (12.2%)	.119
COVID-19[b]	0 (0.0%)	0 (0.0%)	—
Bacteremia	1 (2.9%)	0 (0.0%)	.102
Urinary tract infection	1 (2.9%)	1 (1.1%)	.470
Pneumonia	1 (2.9%)	2 (2.2%)	.816
Cellulitis	0 (0.0%)	0 (0.0%)	—
Intra-abdominal infection	0 (0.0%)	0 (0.0%)	—
Other bacterial infection	0 (0.0%)	1 (1.1%)	.537
C. diff infection	4 (11.8%)	8 (8.9%)	.629
Non-C. diff enteric infection	1 (2.9%)	1 (1.1%)	.470
Opportunistic infection	1 (2.9%)	2 (2.2%)	.816
Herpes zoster	0 (0.0%)	0 (0.0%)	—
Cardiovascular events	0 (0.0%)	0 (0.0%)	—
Postsurgical infection[c]	0/6 (0.0%)	9/23 (39.1%)	.065
Unplanned readmissions	9 (26.5%)	16 (17.8%)	.282
Steroids dependence	17 (50.0%)	28 (31.1%)	.051
PCP prophylaxis	7 (20.6%)	14 (15.6%)	.505
Anticoagulation prophylaxis	0 (0.0%)	0 (0.0%)	—

C. diff, *Clostridium difficile;* COVID-19, coronavirus disease 2019; PCP, pneumocystis pneumonia; VTE, venous thromboembolic event.
[a]Complication and steroid dependence rates were assessed in patients who did not undergo colectomy within 90 days of follow-up.
[b]COVID-19 was only assessed for patient where patient follow-up fell after March 1, 2020, the date of the first recorded COVID-19 case in Michigan.
[c]Postsurgical infection rates were assessed in patients who underwent colectomy within 90 days of follow-up (tofacitinib group, N = 6 and contemporary controls, N = 23).

Supplementary Material

Note: To access the supplementary material accompanying this article, visit the online version of *Clinical Gastroenterology and Hepatology* at www.cghjournal.org, and at https://doi.org/10.1016/j.cgh.2021.05.038.

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Conflicts of interest Q5

This author discloses the following: PDRH received consulting fees from AbbVie, Amgen, Genentech, JBR Pharma, and Lycera. The remaining authors disclose no conflicts.

Funding Q6

JAB is supported by T32 DK062708.

Supplementary Table 1. Unadjusted Colectomy Rate

	Controls (N = 113)	Tofacitinib (N = 40)
30 Day colectomy	18 (15.9%)	4 (10.0%)
90 Day colectomy	23 (20.4%)	6 (15.0%)
180 Day colectomy	26 (23.0%)	8 (20.0%)

Supplementary Table 2. Univariable Risk of Colectomy at 90 Days

	HR	95% CI	*P* value
Tofacitinib	0.67	0.73–1.64	.379
Albumin (*g/dL*)	0.25	0.13–0.46	**<.001**
No. of failed targeted therapies	1.56	0.73–3.37	.252
Colonic dilation	17.1	6.41–45.6	**<.001**
Endoscopic Mayo Score	7.62	2.26–25.76	**.001**
C-reactive protein (*mg/dL*)	1.06	1.02–1.10	**.002**
Hemoglobin (*g/dL*)	1.005	1.00–1.01	**.091**

CI, confidence interval; HR, hazard ratio.

Supplementary Table 3. Risk of Colectomy at 90 Days According to Tofacitinib Dosing

	HR	95% CI	*P* value
Corticosteroids without tofacitinib	1.0	—	—
Tofacitinib 10 mg BID	0.66	0.21–2.09	.500
Tofacitinib 10 mg TID	0.11	0.02–0.56	**.008**
Albumin (*g/dL*)	0.25	0.11–0.58	**.001**
No. of failed targeted therapies	1.70	1.18–2.45	**.004**
Colonic dilation	4.84	1.53–15.3	**.007**
Endoscopic Mayo Score	6.29	1.86–21.3	**.003**

BID, twice daily; TID, three times daily.