

# Level and Change of CRP are Associated with 30-day Risk of Colectomy in Patients Hospitalized with Acute Severe Ulcerative Colitis Receiving Infliximab

Tamara Kahan BA, Simon Hong MD, Ariela Holmer MD, John Dodson MD MPH, Aasma Shaukat MD MPH, Joshua Chodosh MD, Mara McAdams DeMarco PhD, Dorry Segev MD PhD, Jordan Axelrad MD MPH, Adam Faye MD MS

Department of Medicine & Surgery, NYU Langone Health, New York, NY

## BACKGROUND AND AIMS

While infliximab (IFX) has been efficacious in reducing colectomy rates among patients with ulcerative colitis, colectomy is still required for many patients.

We aimed to determine predictive factors of colectomy as well as time to colectomy among patients with acute severe ulcerative colitis (ASUC) who received in-hospital IFX treatment.

## METHODS

We performed a single-center retrospective analysis of patients with ASUC who were treated with at least one dose of IFX while admitted between 2011-2022.

We assessed demographic, clinical, and laboratory predictors of colectomy. Multivariable and time-to-event analysis using Kaplan-Meier with log-rank statistics were used to assess risk factors for time to colectomy within 30 days of first IFX dose.

## RESULTS

22/173 patients (12.71%) underwent colectomy within 30 days of first IFX dose. 152/173 patients (87.86%) received a dosage of 10 mg/kg of IFX.

Higher CRP and lower albumin on admission were significantly associated with 30-day risk of colectomy. A  $\leq 50\%$  decrease in CRP after first IFX dose was also associated with greater 30-day risk of colectomy.

On multivariable analysis, having failed  $\geq 2$  biologics, higher CRP on admission, albumin  $< 3$  g/dL on admission,  $\leq 50\%$  decrease in CRP after first IFX dose, and no improvement in hematochezia after first IFX dose were significantly associated with 30-day risk of colectomy when adjusting for relevant covariables.

On Kaplan-Meier analysis, CRP  $> 100$  mg/dL, albumin  $< 3$  g/dL,  $\leq 50\%$  decrease in CRP after first IFX dose, and having failed  $\geq 2$  biologics were significantly associated with decreased time to colectomy.

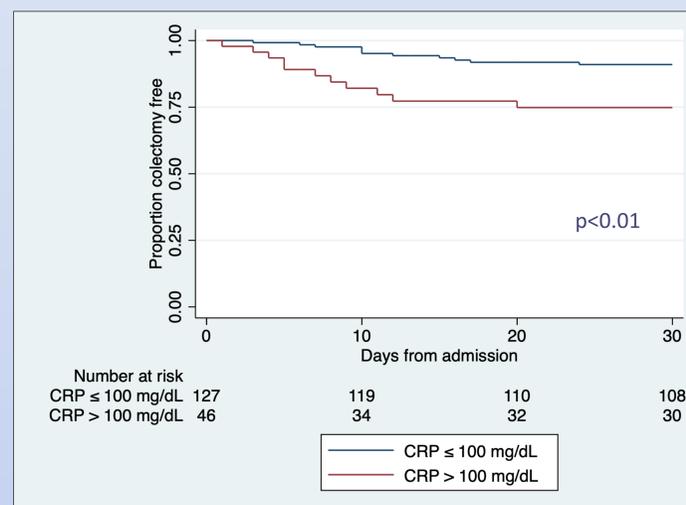
**Table 1: Multivariable analysis examining predictors of colectomy within 30 days of first IFX dose**

Variable	Adjusted Odds Ratio (95% CI)
Disease duration (years)	0.97 (0.88 – 1.06)
Failed $\geq 2$ biologics*	Ref.
No	Ref.
Yes	7.99 (1.12 – 56.87)
CRP on admission (mg/dL)**	1.01 (1.01 – 1.02)
Serum albumin on admission	Ref.
$> 3.5$ g/dL	Ref.
3-3.5 g/dL	1.81 (0.46 – 7.14)
$< 3$ g/dL***	5.79 (1.21 – 27.74)
Colonic dilatation on admission	Ref.
No	Ref.
Yes	0.99 (0.98 – 1.01)
GI infection on admission	Ref.
No	Ref.
Yes	3.96 (0.87 – 18.12)
Percent change in CRP after first IFX dose**	Ref.
$> 50\%$ decrease	Ref.
$\leq 50\%$ decrease	10.73 (2.74 – 41.98)
Change in hematochezia after first IFX dose	Ref.
Complete resolution	Ref.
Some improvement	3.26 (0.82 – 12.96)
No improvement***	7.35 (1.22 – 44.14)

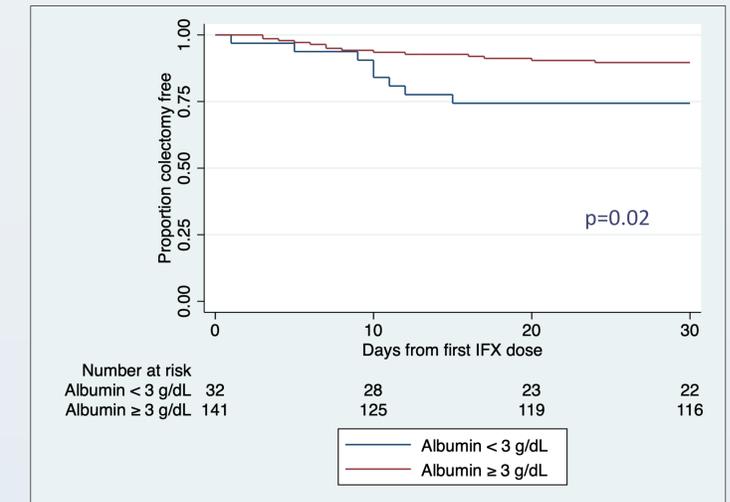
\*p=0.04  
\*\*p<0.01  
\*\*\*p=0.03

**Figure 1: Estimates of proportion of patients with ASUC requiring colectomy within 30 days of first IFX dose**

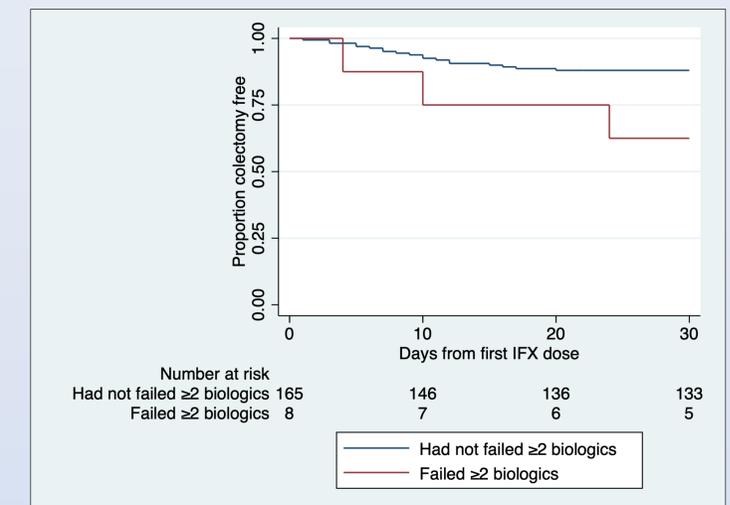
(A) Comparing patients with CRP on admission  $\leq 100$  mg/dL and CRP on admission  $> 100$  mg/dL (p<0.01)



(B) Comparing patients with albumin on admission  $< 3$  g/dL and albumin on admission  $\geq 3$  g/dL (p=0.02)



(C) Comparing patients who failed  $\geq 2$  biologics to patients who had not failed  $\geq 2$  biologics



## DISCUSSION

Among patients with ASUC, higher CRP on admission, lower albumin on admission, and lower percent decrease in CRP after first IFX dose were associated with increased risk of colectomy within 30 days of first IFX dose.

Initial CRP  $> 100$  mg/dL, albumin  $< 3$  g/dL,  $\leq 50\%$  decrease in CRP after first IFX dose, and having failed  $\geq 2$  biologics were associated with decreased time to colectomy.

These results can identify patients at highest risk and impact clinical decision-making regarding need for and timing of colectomy in patients with ASUC receiving IFX.