Time Restricted Feeding is Associated with Improved Patient Reported Outcome in Patients with Mildly to Moderately Active Crohn's Disease

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INTRODUCTION

- Crohn's disease (CD) is a chronic inflammatory bowel disease characterized by alterations in immune function and intestinal dysbiosis.
- Several recent studies[1-3] using pre-clinical mouse models of immunity and inflammation revealed the impact of dietary restriction in regulating intestinal immunity, but the clinical impact of time restricted feeding (TRF) in Crohn's disease has not been assessed.

PURPOSE

To assess the impact of time restricted feeding in patients with mildly to moderately active CD.

METHODS

- Patients with active CD [CRP >1mg/dL, calprotectin (FC) >250 µg/g, or endoscopically or radiologically active disease within 3 months of study entry] were prospectively recruited from a tertiary IBD center to participate in a 4-week open-label TRF protocol.
- Biometric, disease activity, demographic, and laboratory data were collected at baseline and each study visit.
- Body composition scanning (InBody USA, Cerritos, CA, USA) was performed at each visit.
- A registered dietitian counseled patients on implementation of a 16 hour daily intermittent fasting regimen without restricting food composition and maintained diet logs using REDCap.
- Stool and whole blood were collected for microbiota, calprotectin, and immunophenotyping at each visit.
- The primary endpoint was clinical remission as measured Harvey Bradshaw Index <5 and CDPRO2 <8 at week 4.
- Achievement of clinical endpoints was assessed using proportions. Statistical significance was assessed using Fisher's exact test.

RESULTS

Table 1. Demographics and Clinical Characteristics of Study Cohort

Age, years, mean (SD)	49.8 (17.7)
Sex, F (%)	9 (75)
Race, N (%)	
White	8 (66.7)
Black	1 (8.3)
Other	2 (16.7)
Ethnicity, N (%)	
Hispanic or Latino	2 (16.7)
Non-Hispanic	7 (58.3)
Disease duration at baseline, years* (SD)	15.5 (14.9)
BMI, mean (SD)	23.3 (4.8)
Baseline HBI, median (IQR)	5 (3, 6.5)
Baseline CDPRO-2, median (IQR)	10(6.8, 14.5)
Baseline CRP, mg/dL, mean (SD)	1.4 (0.9)
Baseline Calprotectin, ug/g, mean (SD)	621.4 (548.4)
Location, N (%)	
Ileal	2 (16.7)
Colonic	2 (16.7)
Ileocolonic	8 (66.7)
Perianal	4 (33.3)
Phenotype, N (%)	
Non-stricturing, non-penetrating	2 (16.7)
Stricturing only	3 (25)
Penetrating/perforating only	2 (16.7)
Stricturing and penetrating	5 (41.7)
Severity at diagnosis, N (%)	
Mild	1 (8.3)
Moderate	5 (41.7)
Severe	3 (25)
Unknown	3 (25)
IBD Medications, N (%)	
None	3 (25)
Aminosalicylate/budesonide	4 (33.3)
Corticosteroid	1 (8.3)
Immune modulator (MTX, 6MP, AZA)	2 (16.7)
Biologic	8 (66.7)

*based on approximate initial diagnosis date

Figure 1. Changes in biometric and clinical disease activity after TRF regimen. A. Weight **B.** BMI **C.** HBI **D.** Liquid stools **E.** Abdominal Pain

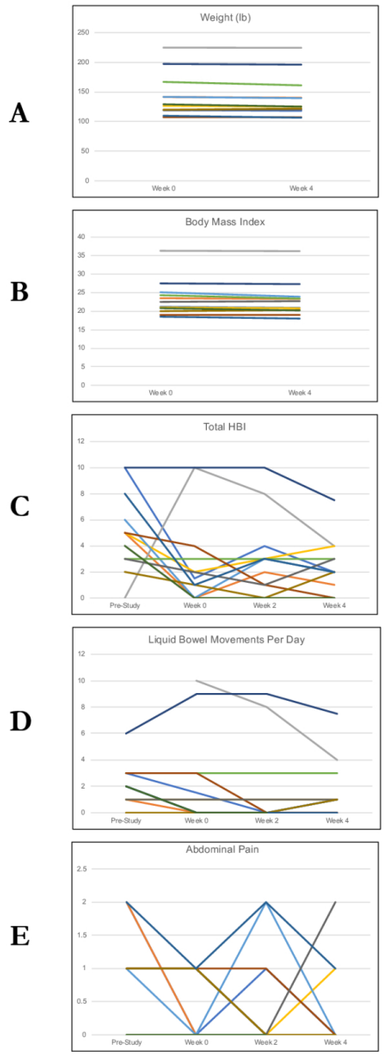
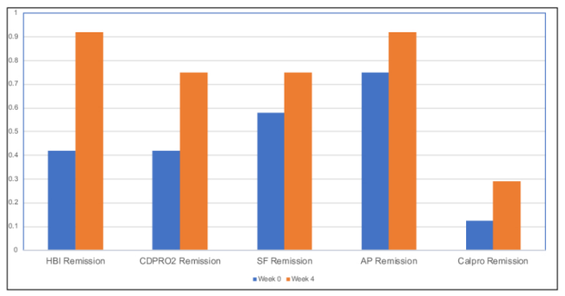


Figure 2. Proportion of patients achieving clinical endpoints after TRF. HBI: Harvey Bradshaw Index <5; Crohn's disease patient reported outcomes 2 <8; Stool Frequency of liquid stools <2; Abdominal Pain <2; Calprotectin <250 ug/g



RESULTS

- Interim analysis of 12 patients [Median baseline HBI 5 (IQR 3,6.5); CDPRO2 10 (IQR 6.8,14.5); 8 female, mean disease duration 15.5 years] revealed that a greater proportion of patients met the primary endpoint as measured by HBI (92% vs 42%, p=0.03) or CDPRO2 (72 vs 42%, p=0.2).
- No difference was observed in CRP, albumin, prealbumin, transferrin, or HbA1c over the study period.
- Among 6 patients with available pre-and post-study FC, a numerically higher proportion had levels <250 following TRF (29% vs 13% p=0.6).
- The TRF regimen was well-tolerated with no study discontinuations.
- Biometric parameters, including weight, body mass index, percent body fat, skeletal muscle index, and truncal adiposity did not reveal significant changes after 4 weeks.

CONCLUSION

- These are the first data to describe TRF in patients with mild to moderate CD and suggest that a four week TRF regimen was well tolerated and associated with improvement in patient reported outcomes without impacting weight or other biometric parameters.
- These findings support the need for further studies to evaluate the efficacy and immune cell impact of TRF as therapy in mild to moderate CD.

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