

## Introduction

- Inflammatory bowel disease is classically associated with significant nutritional deficiencies and metabolic derangement.
- It is increasingly recognized that sarcopenia may impact the clinical course of IBD.
- Several studies have shown that sarcopenia can be quantified through an estimation of three-dimensional muscle mass at the level of L3 vertebra on two-dimensional planar sections (cm<sup>2</sup> of muscle tissue) of CT scans. This cross-section was found to be the most accurate predictor to whole-body muscle mass<sup>1</sup>

## Aims and Background

- To assess the role of sarcopenia in predicting the need for rescue therapy and surgical intervention in patients with acute severe ulcerative colitis.

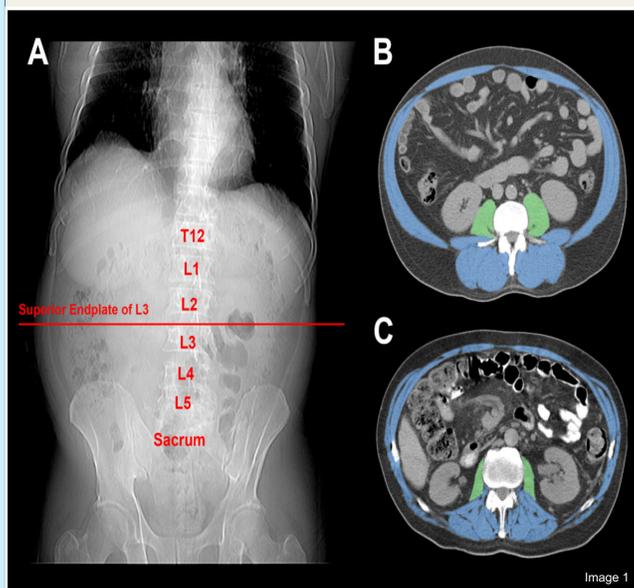
## Methodology

- We conducted a retrospective study of patients hospitalized with acute flare of ulcerative colitis over last 2 years (2018-2019) who underwent CT imaging during hospitalization.
- Sarcopenia was defined according to the following criteria

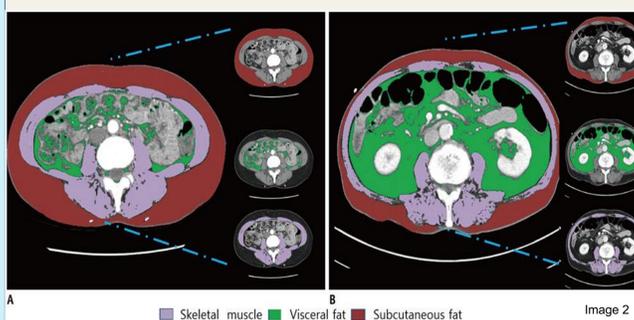
	SMI
Male	<52.4 cm <sup>2</sup> /m <sup>2</sup>
Female	<38.5 cm <sup>2</sup> /m <sup>2</sup>

- We reviewed the electronic data record of our patients regarding rescue therapy and surgical intervention.
- Muscle quantity is classically measured on abdominal computed tomography (CT) at level of third lumbar vertebra (L3) because of the accuracy and strong correlation of the single slice measurement with the total body skeletal muscle mass and the availability of routinely made abdominal CT scans in patients admitted with acute severe colitis.

## Skeletal Muscle Index (SMI)



## CT imaging



Sample CT images at L3 vertebral body level

- Comparison of skeletal muscle (ilac), visceral adipose tissue (green) and subcutaneous fat (brown)

## Data

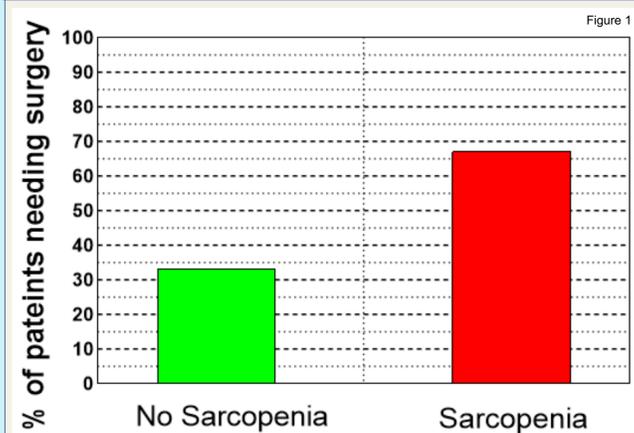


Figure 1: sarcopenic patients( low SMI) are more likely to get surgery versus non sarcopenia group (67% vs 35%)

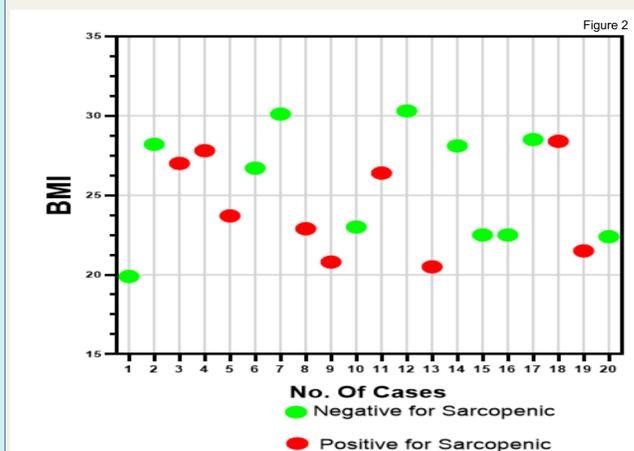


Figure 2: BMI does not correlate well with sarcopenia

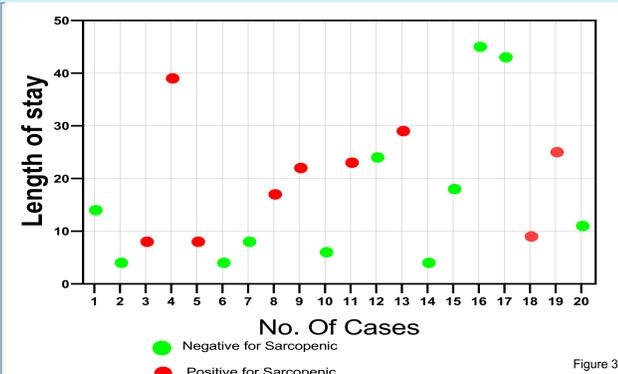


Figure 3: LOS was longer in the sarcopenic group

## Results and Discussion

- 20 patients were admitted with flare of acute severe ulcerative colitis with inpatient CT imaging. Of those, 45% had sarcopenia confirmed on the CT.
- 67% of the sarcopenic cohort needed colectomy vs. 35% in the non-sarcopenia cohort (Figure 1)
- All patients with sarcopenia had BMI >18.5. No correlation was seen with respect to sarcopenia and BMI ( $r^2=0.2$ ), (Figure 2)
- LOS was also longer (20 vs. 16 day) (Figure 3)
- A modest correlation was seen between albumin and sarcopenia ( $r^2=0.4$ ) as well as previous biologic and subsequent need for surgery ( $r^2=0.4$ ).
- The need for rescue therapy was comparable in both subsets.

## Conclusion

- In this pilot study 90% of patients with Sarcopenia ended up with either rescue therapy (22%) or surgery (67%) or both.
- Early detection of Sarcopenia in patients with IBD may be important to prevent surgery and may potentially be a modifiable risk factor.

## Take home message

- Sarcopenia is a an independent Predictor of Surgical Morbidity in patients with Ulcerative colitis.
- A formal assessment, screening by a dedicated IBD dietician, and preoperative physical therapy may facilitate early intervention.

## References

1. Shen W. Total body skeletal muscle and adipose tissue volumes: estimation from a single abdominal cross-sectional image. *J Appl Physiol.* 2004;97(6):2333–2338. doi:10.1152/jappphysiol.00744.2004