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Editorial: Visceral fat as a predictor of post-operative recurrence of Crohn's disease.

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An argument could be made for visceral fat being one of the first biomarkers of Crohn's disease (CD). Hypertrophied mesenteric, or 'creeping', fat encasing affected intestine was reported in the seminal publication describing CD from Oppenheimer and Crohn in 1932[1]. Once thought almost incompatible with the diagnosis, the incidence of obesity in CD has increased dramatically over the last two decades[2,3]. The increasing incidence of CD occurring in parallel with the obesity epidemic has again raised interest in studying the interaction of mesenteric fat and IBD. In place of body mass index (BMI) measurements, body composition analysis has revealed the association of visceral fat with disease activity, complications, and post-operative outcomes in CD [4-6].

Holt and colleagues performed a post-hoc analysis in 44 of 174 patients from the POCER study to determine whether pre-operative image-based body composition parameters were associated with post-operative CD recurrence[7]. Disease recurrence at 18 months following surgery, defined by a Rutgeerts' score of I2 or greater, was compared to fat and skeletal muscle area measurements at the L3-L4 level derived from CT and MR studies using the SliceOmatic body composition analysis platform (Tomovision, Montreal, Canada). The authors found that an increased visceral fat area, adjusted for overall body height and gender (visceral adipose tissue/height index) was associated with endoscopic disease recurrence (RR 2.1, 95%CI 1.5-3.0). Highlighting the value of more granular body composition data, BMI was not correlated with endoscopic recurrence (p=0.614). These results agree with other work showing standardized visceral fat measurement (but not BMI) to be correlated with poor CD outcomes[4-6].

Is visceral fat quantification positioned to become a clinically useful predictor of CD recurrence? At present, more work is needed to determine the best use, if any, of body composition for improving post-operative prognostic accuracy. The degree of visceral fat may

be influenced by several factors, including corticosteroid exposure, prior abdominal surgery, stricturing or penetrating complication and Crohn's disease activity itself. The authors recognized this and did report that high-risk patients (prior surgery, smokers), steroid users, and post-operative treatment intensity did not differ by endoscopic recurrence status, albeit using univariate analysis. The VHI cut-off value of >1.5 times the gender mean demonstrated a sensitivity and specificity of 100% (82%-100%) and 29% (12%-51%) for identifying disease recurrence. While visceral fat measures alone may be insufficient to guide therapeutic escalation, it may still make a meaningful contribution to models predicting future CD recurrence.

Perhaps more valuable than exploring its potential as a biomarker, this study adds to mounting evidence evaluating the association between visceral fat and intestinal inflammation. Visceral fat adipocytes have increased expression of several inflammatory cytokines including TNF-a, IL-1, and IL-6[8]. Adipocyte inflammatory expression profiles occur not only at hypertrophied fat surrounding diseased bowel but also in the distant omental mesentery. Human observations showing increased translocation of luminal bacteria to the mesenteric fat of subjects with Crohn's disease compared to unaffected patients[9]. Questions remain whether visceral fat proliferation and activity is a contributing cause, or alternatively result, of intestinal inflammation. Nonetheless, continued exploration of the interaction between visceral fat and disease course is likely to provide important insight into the pathophysiology of Crohn's disease.

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