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Is This Stricture Inflammatory?

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About 75% of all patients suffering from Crohn's disease (CD) have to undergo surgery at least once during the course of their disease [1–4]. In half of these patients, intestinal obstructions and strictures are the indication for surgery. This means that intestinal obstructions cause the need for abdominal surgery in approximately one third of all CD patients. In more than 45% of those patients the obstructions are recurrent.

These data indicate that a stricturing disease course is still a major challenge in the clinical care of CD patients [1]. As therapeutic options differ, it is of major importance for the clinical management if a stenosis is fibrotic, inflammatory or both (and in the latter case more fibrotic or more inflammatory). An inflammatory stenosis would primarily be treated conservatively with (topical) steroids, immunosuppressants or biologicals. A fibrotic stenosis will not respond to such a treatment and should be operated early as a conservative approach may raise the risk for complete bowel obstruction.

In clinical practice we usually apply different diagnostic tools to discriminate between fibrotic and inflammatory strictures. We use imaging techniques (such as MRI or CT and ultrasound), evaluate systemic parameters of inflammation (such as CRP or ESR), and quantify fecal markers of inflammation (such as calprotectin or lactoferrin) [5]. Sometimes we obtain sufficient information from such diagnostic techniques to make a decision, sometimes we do not have sufficient evidence for one or the other option. Therefore, frequently a probatory steroid treatment will be performed. However, it has to be kept in mind that a steroid dose of more than 20 mg/day may increase the frequency of perioperative complications [6].

Recent data indicate that ultrasound has similar specificity and sensitivity as compared to MRI for the evaluation of CD activity [7, 8]. Ultrasound has been shown to be useful for the clinical management of CD [8–12]. Ultrasound results have been shown to be predictive for the disease behavior [10–16], which is of importance in the context of the study presented in this issue of *Digestion*.

Bowel wall thickness has been the most important readout in studies on the diagnostic value of ultrasound in IBD patients [10, 11, 16–19]. In addition to simple morphometry, contrast-enhanced ultrasound or splanchnic artery blood flow measurements have been applied with mixed results [12, 20–25].

Ultrasound has on one hand the great advantage of being readily available and non-invasive. It can be used repeatedly to monitor therapeutic success. On the other hand the subjective nature of ultrasound has been regarded as its major disadvantage. Therefore, the aim of the study by Schirin-Sokhan and co-workers [26] was to define objective quantitative measures of stricture characteristics (fibrostenotic vs. inflammatory) using contrast-enhanced ultrasound in CD patients with small bowel stenosis. The authors prospectively recruited 18 consecutive CD patients with a localized significant small bowel stenosis during a period of 18 months. They performed a standardized ultrasound examination, color-coded duplex sonography and contrast-enhanced ultrasound using SonoVue®. Bowel wall vascularity was quantified using computerized algorithms.

Schirin-Sokhan et al. [26] found no significant correlations between the vascularity parameters and the outcome in the clinical follow-up (which is the most important parameter) that would indicate a method for a clear sono-

graphic discrimination between fibrostenotic and inflammatory stenoses in CD patients. Certainly the results of this study have to be interpreted carefully due to the limited number of patients investigated. With a number of only 18 patients that may have had mixed (fibrotic and inflammatory) strictures it is very hard to find sufficient positive predictive values for a diagnostic technique.

Whether the establishment of computerized algorithms for objective quantification of bowel wall vascu-

larity will be helpful has to be evaluated by further studies. The study presented in this issue of *Digestion* should stimulate such research.

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