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Contrast enhanced ultrasound (CEUS): A new safe, bedside method of differentiating fibrotic from inflammatory ileal strictures in Crohn's Disease

Background: In patients with Crohn's disease (CD) complicated by ileal stricture, both acute inflammation and chronic fibrosis contribute to luminal narrowing and obstruction. The ability to differentiate between reversible inflammation that responds to medical therapy and a predominantly fibrotic stricture that requires surgical resection holds important clinical implications. CEUS is a non-invasive, inexpensive, radiation-free and fast modality that provides a functional assessment of ileal strictures.

Methods: CEUS was performed on 12 pediatric patients with CD complicated by ileal strictures. Contrast enhancement kinetics of the distal ileum were assessed, including wash-in slope, peak intensity, time to peak intensity and area under the curve. This quantifiable kinetics reflect the dynamic pattern of blood perfusion in the examined tissue. The same technique was also applied to healthy jejunal bowel, thus allowing each patient to act as their own internal control.

Results: CEUS of the distal ileum that revealed a narrowed lumen, thickened submucosa, decreased peristalsis as well as lower wash-in slope, time to peak, peak intensity and area under the curve as compared to jejunal kinetics would favor a fibrotic rather than inflammatory obstruction that was further verified at the time of surgery and by histology.

Summary: CEUS is a non-invasive, inexpensive, radiation-free and fast mode of imaging that provides a functional assessment of ileal strictures in patients with CD that may help guide the medical and surgical management of stricturing small bowel disease.

Biography

Carmen Cuffari is Associate Professor of Pediatrics at The Johns Hopkins University, USA and completed his MD from University of Ottawa. He was a Research Assistant for Dr. S Qadir at University of Ottawa.

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