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WJGS mainly publishes articles reporting research results and findings obtained in the field of gastrointestinal surgery and covering a wide range of topics including biliary tract surgical procedures, biliopancreatic diversion, colectomy, esophagectomy, esophagostomy, pancreas transplantation, and pancreatectomy, *etc.*

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Does shear wave elastography technology provide better value for the assessment of perianal fistulizing Crohn's disease?

Jiong Wu

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Abstract

Magnetic resonance imaging is the gold standard compared other clinical findings. But shear wave elastography technique combined with endoscopic ultrasound can evaluate the degree of fibrosis of fistula tissue in Crohn's disease patients. This topic is highly relevant to the current discourse, especially for It shows a certain degree of innovation and practicality and is worthy of study and popularization.

Key Words: Perianal fistulizing Crohn's disease; Shear wave elastography; Ultrasound; Magnetic resonance imaging

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Core Tip: This study firstly described the shear wave elastography technique to evaluate the degree of fibrosis of perianal fistulizing Crohn's disease (CD) patients. Compared with magnetic resonance imaging, this technique may be complementary to the evaluation of CD lesions, but it is still in the exploratory stage, and the relevant results can be used as a reference.

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TO THE EDITOR

Crohn's disease (CD), a subtype of inflammatory bowel disease, is characterized by alternating periods of inflammation and remission, presenting complex and diverse clinical symptoms and signs[1]. Regular and accurate assessment of disease activity is crucial for selecting appropriate and effective clinical treatments. Current methods for clinical diagnosis and assessment of CD include symptom scores, endoscopic evaluations, computed tomography (CT) and magnetic resonance imaging (MRI). However, these tests, including CT enterography, have certain limitations in assessing entero-fibrosis[2].

In recent years, the application of ultrasound has become increasingly extensive due to its ability to display the thickness, level, intestinal stenosis, hardness of the pathological intestinal wall, presence of extraintestinal lymph nodes, and other changes. Ultrasound also offers the advantages of rapid availability and low cost. Studies have demonstrated that the diagnosis and treatment of CD can be realized by utilizing two-dimensional conventional ultrasound, color Doppler flow imaging, shear wave elastography (SWE), and gastrointestinal angiography[3]. Notably, SWE exhibits a sensitivity and specificity exceeding 80% for evaluating the thickness of the intestinal wall in CD patients.

Since its initial proposal by Ophir *et al*[4] in 1991, elastic imaging technology has emerged as a prominent area of interest for medical professionals. SWE is a widely utilized noninvasive ultrasonic technique for elastic quantification, capable of accurately assessing the degree of fibrosis. In recent years, SWE has found extensive application in the evaluation of thyroid, breast, liver, gastrointestinal, and other diseases. SWE employs excitation pulses to generate shear waves, and the speed of these waves is correlated with the hardness of the tissue. Harder tissues exhibit faster shear wave speeds, while softer tissues demonstrate slower shear wave velocities.

Perianal fistula is a prevalent complication of CD. After an initial evaluation of the severity and extent of involvement, the primary objectives of surgery for fistulizing perianal disease are sepsis control and symptom relief, followed by a gradual surgical approach aimed at preserving adequate sphincter function. Consequently, accurate assessment is crucial for guiding the treatment of perianal fistulizing CD (pfCD). Current evaluation methods for pfCD include CT scan, ultrasound, MRI, or fistulography, which should be considered for patients. MRI is considered the gold standard when compared to operative/clinical findings; it correctly identified all abscesses and 82% of fistulas in patients with perianal CD[5]. Buchanan *et al*[6] conducted a study comparing limited clinical examination (awake, no probing), endoscopic ultrasound (EUS), and MRI in patients with fistula-in-ano, finding that these modalities accurately classified the fistula in 61%, 81%, and 90% of patients, respectively. A meta-analysis of MRI and EUS for the assessment of fistula-in-ano indicated that the sensitivities of MRI and EUS were both 87%, while their specificities were 69% and 43%, respectively[7].

Compared to MRI, EUS offers advantages in terms of cost-effectiveness, convenience, and high repeatability. Previous findings suggest that SWE technology demonstrates good sensitivity and specificity in evaluating intestinal wall thickness in patients with CD. This study is the first to describe the application of the SWE technique in assessing the degree of fibrosis in fistula tissue among CD patients. Such an assessment is not feasible with MRI. This approach exhibits innovation and practicality, warranting further study and popularization. However, certain challenges need to be addressed: (1) The accuracy of the examination requires improvement, as pfCD involves extensive lesions and a high likelihood of infection in the superior levator space, heavily relying on the operator's expertise. Consequently, stringent quality control and reproducibility standards are crucial to minimize inter-operator variability in results; and (2) Larger sample sizes or multi-center studies are anticipated, and establishing relevant parameter ranges is essential for its future reliability as an evaluation tool.

In conclusion, while this technique remains in the exploratory phase, the evaluation results of CD lesions may serve as a valuable reference for further research and clinical application.

FOOTNOTES

Author contributions: Wu J was responsible for all the work of this study.

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