ARTIFICIAL INTELLIGENCE IN THE DIFFERENTIAL DIAGNOSIS OF INFLAMMATORY BOWEL DISEASES AND IRRITABLE BOWEL SYNDROME

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A retrospective study of 1006 patients developed artificial neural networks to distinguish inflammatory bowel disease from irritable bowel syndrome using clinical and laboratory markers, achieving high sensitivity (95.8%) and specificity (90.2%) for IBD detection but only moderate accuracy (75-79%) for differentiating Crohn's disease from ulcerative colitis.

KEY POINTS

- The multilayer perceptron ANN achieved 95.8% sensitivity and 90.2% specificity in distinguishing IBD from IBS using clinical symptoms, anamnesis data, and laboratory tests including fecal calprotectin
- Key IBD distinguishing features included diarrhea 5 or more times daily (40.0% vs 6.2% in IBS), blood in stool (65.3% vs 6.8%), higher fecal calprotectin, and presence of extraintestinal or perianal manifestations
- IBS patients were significantly more likely to have constipation (34.8% vs 5.0%), fewer bowel movements, and absence of extraintestinal manifestations (94.1% vs 66.3%)
- A linear ANN with 5 input neurons showed moderate accuracy in differentiating UC from CD (78.7% for CD detection, 75.4% for UC), with perianal manifestations and prior intestinal surgery more common in CD
- The authors conclude further work is required to improve accuracy and enable clinical implementation of these diagnostic tools

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