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Summary

RESPONSE TO TOFACITINIB IN ULCERATIVE COLITIS PREDICTED BY A MACHINE-LEARNING ALGORITHM; A MULTI-OMICS APPROACH

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A multi-omic machine learning model combining baseline tissue and blood transcriptomics, proteomics, and microbiome data predicted histo-endoscopic mucosal improvement with tofacitinib in ulcerative colitis with an AUROC of 0.744.

KEY POINTS

- In a prospective study of 40 moderate to severely active UC patients treated with tofacitinib 10mg BID for 8 weeks, 38% achieved histo-endoscopic mucosal improvement defined as endoscopic Mayo score ≤1 with histologic remission.
- The multi-omics predictive model included 50 features, predominantly transcriptomic features from tissue and blood, and predicted response with an AUROC of 0.744 (± 0.034) in 27 patients with complete omic sampling.
- Top predictive features included tissue transcripts (HBQ1, RBM23, SDC4), blood transcripts (SYNCRIP, RPL10, DOK3), proteins (Hsp90 co-chaperone Cdc37, Gamma-glutamyl hydrolase, Nidogen-1), and microbiome genera (Lachnospiraceae UCG-004, Dorea).
- The study population was treatment-experienced with 78% prior anti-TNF exposure, 55% prior vedolizumab, and 65% presenting with severe endoscopic disease.
- The authors state that further validation is warranted before clinical application of this predictive model.

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