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Summary

QUANTITATIVE HISTOLOGIC FEATURES OF THE INFLAMMATORY MICROENVIRONMENT IN PATIENTS WITH ULCERATIVE COLITIS ASSOCIATE WITH ENDOSCOPIC RESPONSE TO UPADACITINIB AT INDUCTION

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Machine learning analysis of baseline UC biopsies from two clinical trials identified histologic features relating to goblet cells, goblet cell mucin, and spatial immune cell patterns that associated with and predicted endoscopic response to upadacitinib at week 8 induction.

KEY POINTS

- Of 402 machine learning-derived histologic features, 193 were significantly prognostic of endoscopic response at week 8 induction in 732 UC patients from two upadacitinib trials.
- Features positively associated with response included elevated goblet cell density in epithelium (OR 1.77), elevated goblet cell mucin area (OR 1.49), and elevated normal epithelium area (OR 1.65), while elevated neutrophil density (OR 0.48) and crypt abscess/ granulation tissue area (OR 0.52) were negatively associated.
- Fraction of eosinophils and neutrophils within 20 microns of goblet cells were both independently prognostic and predictive of endoscopic response to upadacitinib.
- Multivariable models using baseline histologic features predicted endoscopic response with AUROC 0.84 in the test set, 0.80 in the upadacitinib-treated group, and 0.74 in the placebo group.
- Authors note that further validation in larger cohorts is necessary before these potential biomarkers can be applied clinically; relevant for researchers investigating predictive biomarkers in UC and clinicians interested in treatment selection strategies.

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