

LOW MACROPHAGE DENSITY DEFINED USING AN ARTIFICIAL INTELLIGENCE-BASED CELL QUANTIFIER PREDICTS PROGRESSION FROM LOW-GRADE DYSPLASIA TO ADVANCED DYSPLASIA IN INFLAMMATORY BOWEL DISEASE

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Poster

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In inflammatory bowel disease patients with low-grade dysplasia, lower macrophage density within dysplastic areas was associated with increased risk of progression to high-grade dysplasia or colorectal cancer.

KEY POINTS

- A case-control study of 64 IBD patients who progressed from low-grade dysplasia to advanced dysplasia and 122 matched controls analyzed 233 samples using an AI-based cell quantifier on digitized histology slides.
- Macrophage density was markedly higher in low-grade dysplasia areas compared to surrounding tissue (mean 597.8 versus 241.6 macrophages per square millimeter, p less than 0.001).
- Patients in the lowest quartile of macrophage density within low-grade dysplasia areas had an almost twofold increased risk of progression to advanced dysplasia compared to other quartiles (p equals 0.013).
- The AI-based cell quantifier was applied to standard H&E-stained slides without requiring alterations to slide preparation or model structure, enabling automated quantification of cellular distribution.
- This study demonstrates a potential biomarker for risk stratification in IBD patients with low-grade dysplasia, which currently poses challenges in defining individual progression risk.

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