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Summary

EXPLORING A MULTIDIMENSIONAL PERSPECTIVE ON INTESTINAL PERMEABILITY IN INFLAMMATORY BOWEL DISEASE: INTERPLAY AMONG MICROBIOTA, NUTRITION, AND MORPHOLOGICAL FEATURES

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IBD

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A study of 35 IBD patients integrating histological, microbial, and dietary analysis found reduced tight junction proteins, increased fibrosis in Crohn's disease, low dietary fibre intake, and a positive correlation between microbial diversity and histological severity, suggesting context-dependent barrier remodelling rather than uniform loss of integrity.

KEY POINTS

- Tight junction proteins CLDN-3, CLDN-4, and ZO-1 were significantly reduced in IBD patients compared to controls, and collagen deposition was significantly increased in Crohn's disease compared to ulcerative colitis
- CLDN-3 expression inversely correlated with collagen deposition, while ZO-1 positively correlated with collagen in Crohn's disease; more severe histological damage was associated with lower ZO-1 but higher CLDN-3, suggesting selective rather than uniform barrier protein changes
- Shannon microbial diversity index positively correlated with histological severity by Geboes Score, and phylogenetic diversity was significantly reduced in ulcerative colitis compared to controls
- Dietary assessment revealed markedly low fibre consumption (mean 12.18 g/day) with no patient reaching adequate intake and poor adherence to the Mediterranean diet
- The authors interpret the findings as supporting a multidimensional model of IBD barrier dysfunction involving tissue remodelling, microbial ecology, and dietary influences, and call for larger studies to clarify biological significance

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