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Pathological insights into chronic inflammatory bowel disease: A comparative study.

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Introduction

Chronic Inflammatory Bowel Disease (IBD), encompassing Crohn's Disease (CD) and Ulcerative Colitis (UC), represents a group of idiopathic, chronic, and relapsing intestinal disorders marked by persistent inflammation of the Gastrointestinal (GI) tract. Despite their overlapping clinical symptoms, CD and UC exhibit distinct pathological features, which play a crucial role in diagnosis, management, and prognosis. This comparative study provides insights into the pathological differences and similarities between the two major forms of IBD, focusing on histological, endoscopic, and molecular characteristics. [1].

Histologically, UC is characterized by continuous mucosal inflammation starting from the rectum and extending proximally in a contiguous pattern. The inflammation in UC is typically limited to the mucosa and submucosa, often showing crypt architectural distortion, basal plasmacytosis, and mucosal ulceration. Crypt abscesses, formed by neutrophil infiltration into the crypt lumina, are a hallmark finding. On the other hand, CD is known for its patchy, transmural inflammation that can affect any part of the GI tract, from mouth to anus, though the terminal ileum and colon are most commonly involved. Histopathological features in CD include focal crypt irregularities, transmural lymphoid aggregates, non-caseating granulomas, and fissuring ulcers. These granulomas, though not always present, are pathognomonic when identified.[2].

Endoscopically, UC typically shows a uniform pattern of inflammation, with loss of vascular markings, granularity, friability, and superficial ulcerations confined to the colon. In contrast, CD often presents with segmental involvement (skip lesions), cobblestone mucosa due to deep linear ulcers and edematous tissue, and perianal disease manifestations such as fistulas and abscesses. The presence of strictures and deep fissures in CD further differentiates it from UC. [3]

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Importantly, pathological differences influence treatment strategies. While both conditions benefit from anti-inflammatory agents and immunosuppressants, the presence of transmural involvement and fistulizing complications in CD often necessitates the use of biologics targeting TNF-α or integrins. In contrast, colectomy can be curative in UC, especially in refractory cases or when dysplasia is detected, whereas surgery in CD is not curative and is reserved for complications like strictures or abscesses. [5].

Conclusion

The pathological evaluation of IBD provides crucial diagnostic clarity, helping to distinguish

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between UC and CD through characteristic histological and morphological features. Understanding these differences not only aids in accurate diagnosis but also tailors therapeutic approaches and informs long-term management. Ongoing research into molecular pathways and immune responses continues to expand our knowledge, paving the way for precision medicine in the care of patients with chro nic inflammatory bowel disease.

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