Short Communication

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Histopathological analysis of crypt changes in inflammatory bowel disease

Fernandes da Silva, A.P[1], Nascimento, G.A.F[2], Mello, L.A[3], Souto Maior, M.R.M[1], Paz, S.T[1], Melo-Júnior, M.R[1,3]

1 – Programa de Pós-graduação em Patologia, CCS/UFPE, Brazil
2 – Programa de Pós-graduação em Ciências Biológicas, CCS/UFPE, Brazil
3 – Laboratório de Imunopatologia Keizo Asami - LIKA/UFPE, Brazil

Abstract

Inflammatory bowel disease including Crohn's disease and ulcerative colitis. The histological cuts of anorectal tissue from patients with IBD were submitted to hematoxylin and eosin, Masson's trichrome, alcian blue and periodic acid–Schiff stainings. Those results showed histopathological parameters used in the diagnostic of IBD patients, including crypt changes and chronic inflammation. Histopathological classification of IBD as UC or Crohn's disease is often difficult, but the distinction is very important for management of disease and choosing the optimal pharmacotherapeutic follow-up.

Introduction

Inflammatory bowel disease (IBD) including Crohn's disease (CD) and ulcerative colitis (UC) are described as chronic conditions of multifactorial etiology characterized by recurrent episodes of inflammation of gastrointestinal tract1.

Experimental models suggest that the emergence of these diseases is the result of joint action of environmental, immunologic and genetic factors that result in changes in the integrity of the mucosal barrier intraluminal1,2.

Incidence rates of IBD vary from 3.1 to 20.2 new cases per 100,000 habitants per year for CD and from 2.2 to 19.2 per 100,000 inhabitants for UC2.

Crohn's disease constitute a discontinuous and transmural disorder that can affect any portion of the gastrointestinal tract unilaterally or multifocal. Macroscopically, are noted hyperemic areas permeated by areas of exudation in serous. The mucosa shows aphthous ulcers that may progress to bleeding ulcers, serpiginous or lineares3.

Ulcerative colitis affects, almost exclusively, the colorectal mucosa. The inflammatory pattern tends to be symmetrical, continuous and diffuse. The serous does not display changes and displays the mucosa hemorrhagic appearance, erythematous and granular. Another relevant aspect is the macroscopic presence of some pseudopolyps most often located in the colon4.

Material and Methods

A thin layer of resin extracted from Aloe vera leaves was applied to the slides in order to ensure adherence and prevent tissue detachment during staining procedures. After the paraffin blocks underwent microtomy in triplicate, the histological cuts (5µm) of anorectal tissue from patients with IBD were deparaffinized, hydrated, and subjected to hematoxylin and eosin (HE) stain, Masson's trichrome (MT) stain, alcian blue (AB) and periodic acid–Schiff (PAS) stainings. Subsequently, the slides were dehydrated in ethanol, diaphonized in xylene, and mounted with glass slide and Entellan®.

Results

The present study evaluated anorectal tissue from patients with IBD, Crohn's disease (5) and ulcerative colitis (5). The main alterations observed in DC was the presence of focal or anatomically discontinuous crypt distortion and normal mucosal surface (Figure 1A), diffuse chronic inflammation (Figure 1B), intense fibrosis (Figure 1C), segmental mucin and glycoproteins depletion (Figure 1D).

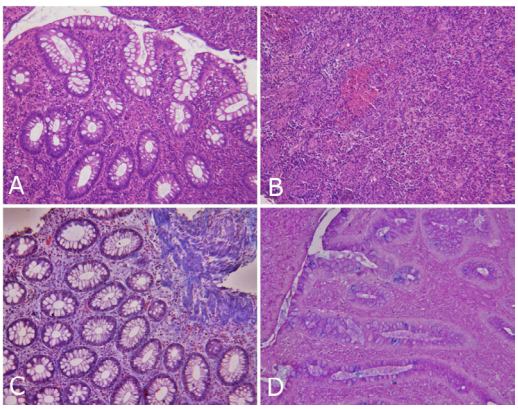

Figure 1 – Crohn's disease. A. HE, 100x. B. HE, 100x. C. TM, 100x. D. AB/PAS, 100x

A diffuse distortion and atrophy of crypts in a colorectal biopsy, typical of UC was observed (Figure 2A), thin areas of fibrosis (Figure 2B) and mucin and glycoproteins depletion (Figure 2C 2D).

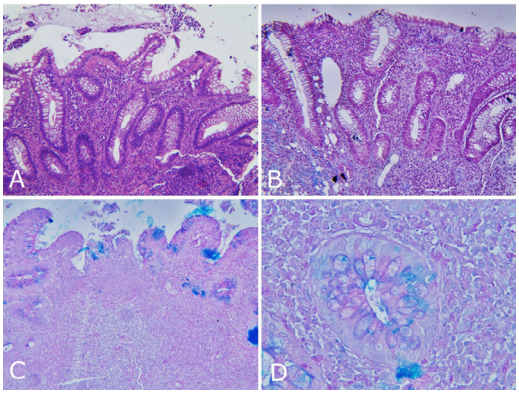

Figure 2 – Ulcerative colitis. A. HE, 100x. B. TM, 100x. C. AB/PAS, 100x D. AB/PAS, 400x

Discussion and Conclusion

The histologic examination of endoscopic biopsies or resection specimens remains a key step in the work-up of affected IBD patients and can be used for differential diagnosis, particularly in the differentiation of UC from CD and other non-IBD related colitides5.

The combination of diffuse crypt changes is usually with associated chronic inflammation and is a strong pointer towards UC rather than CD. Crypt atrophy and distortion are more likely to be present in biopsies from UC than in those from CD, partly because they are often focal rather than extensive in the latter6,7.

Mucin depletion may instinctively seem subjective and difficult to grade. However, interobserver agreement for the distinction between severe mucin depletion and lesser degrees of depletion is fairly good7.

Crohn's disease, particularly if severe, can show diffuse chronic inflammation at a single site and even at multiple sites7. The presence of granulomas discriminates more strongly than any other feature between UC and CD. Unfortunately, granulomas are confined to a minority of Crohn's disease biopsies5.

In conclusion, the histologic examination of biopsies remains a key step in the differential diagnosis of IBD. Histopathological classification of IBD as ulcerative colitis or Crohn's disease depends on identifying the microscopic features most useful for diagnosing and subclassifying, but the distinction is very important for management of disease and choosing the optimal pharmacotherapeutic follow-up.

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