Management of inflammatory bowel disease (IBD): current and future perspective

M. Manzurul Haque

Department of Surgery, Barind Medical College, Rajshahi, Bangladesh.

Correspondence to : M M Haque drmanzur7@gmail.com

Cite this as: BMCJ 2018;4(1): 1-2

Received : 11 November 2017
Accepted : 7 December 2017

Inflammatory bowel disease (IBD) encompasses chronic idiopathic inflammatoy disorders of gastrointestinal tract with a multifactorial pathophysiology. They include Ulcerative Colitis (UC) and Crohn's Disease (CD) with different clinicopathological entity. Ulcerative colitis is characterised by diffuse inflammation affecting the mucosa of Rectum and distal colon only whereas Crohn's disease involves patchy transmural ulceration that can affect any part of the gastrointestinal tract. Around 5% of patients have features of both subtypes.[1]

Complete understanding of pathology of IBD is still out of sight. However as a multifactorial disorder the components involved in IBD pathogenesis include environmental, genetic, microbial and immunological factors. These components are continuously being investigated to contribute to the development of advanced management tools.

The gastrointestinal (GI) tract maintains immune homeostasis, involving non-pathogenic commensal organisms, self-antigens, and food antigens, and other immune complexes for protecting the host against pathogenic organisms by mounting an inflammatory response. The fine line between tolerance and inflammation of the GI immune system, when disrupted, may result in diseases such as inflammatory bowel disease (IBD).[2] Role of microbial factors may be explained as mucosal immune response against gut microorganisms in genetically susceptible individuals.[3] At the same time some environmental factors play an very important role in the overall pathogenesis of IBD.[4] Role of innate immunity and adaptive immunity in IBD pathogenesis is much more complex than can be postulated with available scientific facts. However, improved understanding of the immunopathogenesis of IBD has led to development of successful biological therapies.

Therapeutic immunomodulation for IBD can take place at various stages of the inflammatory cascade. Current approved therapies have been successful in targeting TNF, with the use of infliximab, adalimumab, certulizumabpegol and golimumab and T-cell homing to the gut, with the use of vedolizumab blocking a4b7 integrin. Newly approved drugs, JAK inhibitor tofacitinib and IL-12/23 p40 subunit blocker ustekinumab, interfere with effector T-cell differentiation. Management plans in the future for approval include the cytokine-based therapies such as IL-23 p19 subunit inhibitor risankizumab and IL-6R antagonist tocilizumab, the lymphocytes homing modulator ozanimod, the selective JAK1 inhibitor filgotinib, the TLR9 agonist cobitolimod, and Treg cell based therapies. A number of undetermined management options include IFN-c neutralization with fontolizumab and recombinant human IL-10 therapy.[5] In the next line novel targeting strategies are being evaluated in animal studies. Emerging human studies include modulation of the natural killer group 2 member D (NKG2D) receptor with an inhibitory antibody (NNC0142-0002) for the prevention of mucosal damage in CD.[6] A recent study characterized a new subset of IBD patients with high levels of serum and mucosal IgG4 which were more likely to have severe and extensive lesions, and IgG4 may be a biomarker for a new subtype of IBD.[7] Now the question is how to identify and match the individual patient with the most suitable therapeutic option. Therefore, we are in bad need of biomarkers that can very precisely define the particular therapy response to give the right treatment to the particular patient and minimize unnecessary exposure and adverse events. Continued understanding of the immunopathogenesis of IBD is, therefore, of utmost importance to further expand the therapeutic potential for patients.

In spite of unprecedented advance in the molecular therapy of IBD, surgical intervention plays a very important role in case of complications related to the disease.[8] Indications for surgery differ with anatomic distribution, pathophysiology and related complications. Advances in surgical approach and technology have led to decrease in associated morbidity and mortality. Although the need for surgical therapy is declining at least 10% of ulcerative colitis patients and 50% of patients with Crohn's Disease will need surgical intervention within first ten years after diagnosis.[1]

The combination of immunosuppression and surgical therapies with judicious selection, each with their own complications and risks, will make the decision of a successful optimal treatment plan for an individual patient.

The future of management plan for IBD looks more promising as several novel treatment options have been identified and clinical studies are underway to determine the efficacy and safety of these therapies. These agents may have huge implications over the future of IBD. We have to wait to see their effectiveness and safety studies during the next decade to come.

References

1. Ella Mozdiak, John O'Malley, Ramesh Arasaradnam, Easily Missed Inflammatory bowel disease BMJ 2015;351:h4416.
2. Ahluwalia B, Magnusson MK, Ohman L. Mucosal immune system of the gastrointestinal tract: maintaining balance between the good and the bad. Scand J Gastroenterol. 2017;52:1185-93.
3. Xu XR, Liu CQ, Feng BS, et al. Dysregulation of mucosal immune response in pathogenesis of inflammatory bowel disease. World J Gastroenterol. 2014;20:3255-64.
4. de Souza HS, Fiocchi C. Immunopathogenesis of IBD: current state of the art. Nat Rev Gastroenterol Hepatol. 2016;13:13-27.
5. Bani Ahluwalia, LuizaMoraes, Maria K. Magnusson, Lena Öhman. Immunopathogenesis of inflammatory bowel disease and mechanisms of biological therapies, Scandinavian Journal of Gastroenterology 2018; 53(4): 379-89.
6. Allez M, Skolnick BE, Wisniewska-Jarosinska M, Petryka R, Overgaard *RVI*. Anti-NKG2D monoclonal antibody (NNC0142-0002) in active Crohn's disease: a randomised controlled trial. *Gut* 2017;66:1918-25.
7. ZhujunWang, Min Zhu, ChengxinLuo, et al . High level of IgG4 as a biomarker for a new subset of infammatory bowel disease Scientific Reports (2018) 8:10018.
8. PrathimaNandivada, VitalyPoylin, Deborah Nagle. Advances in the Surgical Management of Inflammatory Bowel Disease.; Curr Opin Gastroenterol. 2012;28(1):47-51.