A future strategy for the treatment of patients with ulcerative colitis

June 24 2010

A research team from China focused on the effects of the chemokine stromal cell-derived factor-1 receptor (CXCR4) antagonist AMD3100 on the intestinal epithelial barrier. They found that CXCR4 antagonist AMD3100 exerts therapeutic effects on experimental colitis by inhibiting colonic inflammation and enhancing epithelial barrier integrity.

Ulcerative colitis (UC) is characterized by frequent diarrheal attacks and anal bleeding. Histologic characteristics of UC are the invasion of the crypt epithelium and lamina propria by peripheral blood mononuclear cells (PBMCs), disruption of the epithelial lining, and consequently mucosal ulceration and crypt abscess formation in the bowel wall. Regulation of the migration of inflammatory leukocytes into the intestinal tissues is considered to be a therapeutic option for patients with UC. Chemokine stromal cell-derived factor-1 receptor (CXCR4) is specific receptor for chemokine chemokine stromal cell-derived factor-1 (CXCL12), and the latter is a potent chemoattractant for PBMCs. The expression of CXCL12 and CXCR4 on intestinal epithelial cells, lamina propria T cells and PBMCs are significantly increased in UC patients, and block of CXCR4 ameliorates the colonic inflammation in experimental colitis. Whether a CXCR4 antagonist enhances epithelial barrier function, however, has not been unequivocally addressed.

A research article to be published on June 21, 2010 in the World Journal of Gastroenterology addresses this question. This is the first study to report that, in addition to inflammation inhibition, the CXCR4

antagonist, AMD3100, also decreased epithelial apoptosis and gut permeability in experimental colitis, and consequently enhanced the epithelial barrier function.

Their results suggested a pivotal role of the CXCL12/CXCR4 chemokine axis in the pathogenesis of UC. By understanding the role of CXCR4 in colonic inflammation and epithelial barrier, this study may represent a future strategy for therapeutic intervention in the treatment of patients with UC.

More information: Xia XM, Wang FY, Xu WA, Wang ZK, Liu J, Lu YK, Jin XX, Lu H, Shen YZ. CXCR4 antagonist AMD3100 attenuates colonic damage in mice with experimental colitis. World J Gastroenterol 2010; 16(23): 2873-2880.
www.wjgnet.com/1007-9327/full/v16/i23/2873.htm

Provided by World Journal of Gastroenterology