Effect on contractile response due to carbachol and bradykinin stimulation in the rat inflammatory colon.

Hiromi Nobe

Dept. Health Sci. Tech., Bunkyo Gakuin Univ.

Inflammatory bowel disease is a group of chronic disorders characterized by damaged smooth muscle tissues in the digestive tract. We investigated the alteration of carbachol (CCh) and bradykinin (BK) -induced contractile responses in rat colon under inflammatory conditions. Inflammation was induced by an infusion to colonic lumen of the TNBS and the preparations for ring specimen of the colon which we resected were done three days after an injection. The colon tissues were isolated from saline-treated control and TNBS-treated rats. These tissues were placed in physiological organ bath system and then, isometric force were assessed. Treatment of CCh induced dose-dependent force responses in both types of tissue, but the responses were attenuated in the TNBS-treated rat. Maximal response in TNBS-treated rat was about 60 % of control. The presence of nifedipine markedly inhibited the CCh-induced contraction. This the results suggest that the contractile response to CCh of the rat colonis muscle is caused primarily the increase in the cellular Ca^{2+} concentration. On the other hand, treatment of BK responses were significantly increased in the TNBS-treated rat. These contractile response were antagonized by BK_1 receptor antagonists. These results that BK suggests that the susceptibility to BK_1 receptor increases by inflammation.