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Neuromuscular Expression of Cyclo-Oxygenases in Ulcerative Colitis

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Ulcerative colitis (UC) is an inflammatory bowel disease associated with dysfunctional colonic motility which is responsible for abdominal pain and diarrhoea. These changes may be mediated by prostaglandins which are increased in this condition. Increased expression of the constitutive and inducible isoform of cyclo-oxygenases (COX-1 and COX-2, respectively) has been found in active inflammatory bowel disease although their cellular distribution remains uncertain at the level of the colonic neuromuscular compartment.
Aim. To evaluate the cellular distribution of COX-1 and COX-2 in the neuromuscular tissues from patients with UC.
Patients and Methods. Using immunohistochemistry, COX-1 and COX-2 expression was evaluated in 8 full-thickness colectomy specimens from patients with UC who had failed medical therapy. Histologically normal colon full-thickness specimens was obtained from 10 patients having resection for colorectal neoplasia and evaluated as above.
Results. All specimens expressed both COX isoforms although with different cellular distribution and intensity degrees. In control tissues COX-1 was detected in myenteric neurons and circular layer myocytes; COX-2 was expressed mainly in longitudinal layer with little immunoreactivity in neurons. Although a pronounced cell depletion was observed in myenteric ganglia in all inflamed specimens, neurons maintained appreciable COX-1 labelling; COX-2 was significantly upregulated in UC, being localized in cells infiltrating the myenteric plexus and both muscle layers.
Conclusions. These findings provide the first evidence that COX-1 and COX-2 are expressed in myenteric neural cells and muscle layers of colon in UC and may contribute to the colonic dysmotilty associated with this pathological condition.

Colonic neuromuscular abnormalities