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Alimentary Tract

# Decreased interstitial cell of Cajal volume in patients with slow-transit constipation

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### Abstract

**Background & Aims:** The cause of slow-transit constipation is incompletely understood. Recent observations suggest a central role for interstitial cells of Cajal in the control of intestinal motility. The aim of this study was to determine the volume of interstitial cells of Cajal in the normal sigmoid colon and in the sigmoid colon from patients with slow transit constipation. **Methods:** Sigmoid colonic samples were stained with antibodies to protein gene product 9.5, c-Kit, and  $\pm$  "smooth muscle actin. Three-dimensional reconstruction of regions of interest was performed using consecutive images collected on a laser scanning confocal microscope and ANALYZE software. **Results:** Volume of interstitial cells of Cajal was significantly decreased in all layers of sigmoid colonic specimens from patients with slow-transit constipation compared with normal controls. Neuronal structures within the colonic circular smooth

muscle layer were also decreased. **Conclusions:** A decrease in the volume of interstitial cells of Cajal may play an important role in the pathophysiology of slow-transit constipation.

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## Abbreviations

Cy , indocarbocyanine; ICC , interstitial cells of Cajal; LRSC , lissamine rhodamine; PGP , protein gene product; SMA , smooth muscle actin

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