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Importance of the enteric nervous system in the control of the migrating motility complex.

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Abstract

The migrating motility complex (MMC), a cyclical phenomenon, represents rudimentary motility pattern in the gastrointestinal tract. The MMC is observed mostly in the stomach and gut of man and numerous animal species. It contains three or four phases, while its phase III is the most characteristic. The mechanisms controlling the pattern are unclear in part, although the neural control of the MMC seems crucial. The main goal of this article was to discuss the importance of intrinsic innervation of the gastrointestinal tract in MMC initiation, migration, and cessation to emphasize that various MMC-controlling mechanisms act through the enteric nervous system. Two main neural regions, central and peripheral, are able to initiate the MMC. However, central regulation of the MMC may require cooperation with the enteric nervous system. When central mechanisms are not active, the MMC can be initiated peripherally in any region of the small bowel. The enteric nervous system affects the MMC in response to the luminal stimuli which can contribute to the initiation and cessation of the cycle, and it may evoke irregular phasic contractions within the pattern. The hormonal regulators released from the endocrine cells may exert a modulatory effect upon the MMC mostly through the enteric nervous system. Their central action could also be considered. It can be concluded that the enteric nervous system is involved in the great majority of the MMC-controlling mechanisms.

KEYWORDS: animals; enteric nervous system; intrinsic control; man; migrating motor complex

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