Impairment of Overall and Regional High Amplitude Colon Contractions in Severe Slow Transit Constipation Measured by Wireless Motility Capsules


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ABSTRACT

Wireless motility capsules (WMC) have been used to measure overall and regional colon contractile activity. This study examines the presence of associated dysynergia and its clinical consequences in a larger cohort of patients with severe slow transit constipation (STC) recruited to our original WMC study. 

MATERIALS AND METHODS

Overall numbers of colon contractions >25 mmHg in amplitude and areas under pressure curves (AUCs) were significantly reduced in severe STC compared to moderate STC or normal transit constipation (NTC). However, numbers of high amplitude, long duration contractions (HACs) were defined as contractions >100 mmHg in amplitude and >14 sec in duration (similar to colon HAPCs). The pressure transducer-based motility product (MTP), a composite measure of the frequency, amplitude, and duration of contractions, was significantly reduced in severe STC compared to moderate STC or NTC. Colon contractile activity was compared among three groups: NTC (transit <59 hr), moderate STC (transit 59-100 hr), and severe STC (transit >100 hr). Transit was divided into quartiles by time to reach a specific markers. 

Overall numbers of contractions and AUCs were significantly reduced in severe STC compared to moderate STC or NTC. However, numbers of high amplitude, long duration contractions (HACs) were significantly reduced in severe STC compared to moderate STC or NTC. Colon contractile activity was compared among three groups: NTC (transit <59 hr), moderate STC (transit 59-100 hr), and severe STC (transit >100 hr). Transit was divided into quartiles by time to reach a specific markers. 

CONCLUSIONS

Patients with severe slow transit constipation exhibit significantly reduced overall colon contractile activity on WMC versus patients with less severe transit delays. 

High amplitude, long duration contractions on WMC with similar amplitude and duration profiles as HAPCs defined by manometry are especially reduced in severe STC. 

Deficits in high amplitude contractions in severe STC are most prominent in the latter phases of transit. 

Colon contraction defects in severe STC are unaffected by the concurrent presence of dysynergia. 

These findings provide insight into STC and suggest that characterizing high amplitude contractions with WMC testing may provide clinically relevant information.