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Real-time evaluation of dyspeptic symptoms and gastric motility induced by duodenal acidification using noninvasive transnasal endoscopy

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BACKGROUND : Although different pathophysiological mechanisms have been suggested to be involved in functional dyspepsia, a practical method to clarify them has not been established. The aim of this study was to evaluate dyspeptic symptoms and gastric motility induced by duodenal acidification using transnasal endoscopy.

METHODS : Fourteen healthy volunteers (mean age, 32 years) were enrolled. Transnasal endoscopy was performed on all fasting volunteers. Dyspeptic symptoms and antral contractions were evaluated before and after duodenal infusions of pure water (20 ml/min for 5 min) and acid (0.1 N HCl, 20 ml/min for 5 min). The severity of various symptoms was assessed by each subject using a 10-cm visual analog scale every 2 min. The maximum severity scale was calculated as the mean of the individual maximum values. The motility number was defined as the mean number of antral contractions in 1 min.

RESULTS : The maximum severity score for a heavy feeling in the stomach and other symptoms significantly increased after the acid infusion compared with after the pure water infusion. During pure water infusion, there were no changes in the motility number. On the other hand, the motility number significantly decreased after duodenal acidification (before vs. after, 2.93 \pm 0.12 times vs. 1.11 \pm 0.23 times, $P < 0.0001$).

CONCLUSIONS : Duodenal acid exposure induces dyspeptic symptoms and inhibits antral motility. Transnasal endoscopy enabled us to evaluate both dyspeptic symptoms and gastric motility simultaneously.