

## Study of the spontaneous nocturnal alkalization of stomach in subjects with and without duodenal ulcer disease

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### Abstract

**AIM:** Intragastric 24-h pH recordings of 57 subjects were analyzed to evaluate the spontaneous nocturnal alkalization of stomach.

**METHODS:** Among them there were 23 active duodenal ulcer (DU) patients and 34 non-ulcer (NU) subjects that included 6 healthy controls, 12 chronic superficial gastritis and 16 gastroesophageal reflux disease subjects.

**RESULTS:** (1) Spontaneous nocturnal alkalization of the stomach began in the latter part of the night. (2) The mean alkalization times (11 pm - 7 am) in duodenal ulcer patients were significantly lower than those of nonulcer subjects (pH < 3: 12.92 ± 14.1 min vs 117 ± 103 min,  $P < 0.001$ ; pH > 4: 8.04 ± 10.13 min vs 86 ± 82 min,  $P < 0.001$ ). (3) The nocturnal alkalization areas of the duodenal ulcer

patients were significantly lower than those of nonulcer subjects (pH > 3: 36 ± 41 pH × min vs 300 ± 296 pH × min,  $P < 0.001$ ; pH > 4: 24.6 ± 30.45 pH × min vs 213 ± 211 pH × min,  $P < 0.001$ ). (4) The number of alkalization episodes of pH greater than 3 and longer than 5 min in duodenal ulcer patients was significantly lower than that of NU subjects (0.30 ± 0.71 vs 2.087 ± 2.12,  $P < 0.001$ ), and the longest alkalization episodes of pH greater than 3 in DU patients was significantly shorter than that of NU subjects (6.95 ± 14.12 min vs 66.53 ± 66.21 min,  $P < 0.001$ ). And (5) The raw profiles of 24-h recordings in 88.2 percent of nonulcer subjects showed the presence of spontaneous nocturnal alkalization, which was absent in 82.6 percent of duodenal ulcer patients.

**CONCLUSION:** Our results showed that the times and numbers of alkalization episode in DU patients were significantly lower than those of NU subjects, and almost all DU patients lacked the spontaneous nocturnal alkalization of stomach, which might be one of the pathogenesis of duodenal ulcer diseases, and could be a more sensitive sign for diagnosing duodenal ulcer disease.

**Key words:** Gastric alkalization; Duodenal ulcer

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