



24-h intragastric pH rhythm in normal individuals and the influence of proton pump antagonists on intragastric pH levels and serum gastrin levels

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Abstract

AIM: This study reported the 24-h intragastric pH rhythm and the inhibitory effects of Lansoprazole and Omeprazole by oral administration on acid secretion and serum gastrin levels.

METHODS: 38 volunteers participated in the study, mean age 25.4 years old (22-37), male/female 26/12. All volunteers were with negative findings from all medical exams. The female volunteers were not in menstruation. The pH levels were recorded with portable pH recording equipment. The electrode was placed 5 cm below lower esophageal sphincter (LES). They were randomly provided with Lansoprazole 30 mg/d, Omeprazole 20 mg/d or placebo 1 tab/d. Gastrin determinations was performed with radioimmunoassay.

RESULTS: This study showed 24-h intragastric pH rhythm, and pH frequencies were divided into upright, supine, plateau and decline

stages according to Fuch's method. Intragastric pH baseline is 1.63 ± 0.34 , upright 1.58 ± 0.43 , supine 2.17 ± 0.89 , plateau 4.32 ± 1.23 and decline 3.57 ± 0.85 . In this study, 31%-58% of volunteers had spontaneous reflux, which frequently occurred after midnight, total reflux time reached 180.18 ± 91.60 min. Individual reflux time was 22-108 min and pH value was 7.86 ± 0.65 . This is possibly caused by pyloric relaxation due to vagal excitation at night. Acid inhibition of Lansoprazole was stronger than that of Omeprazole the pH > 3 time with Lansoprazole was significantly prolonged to 23.2 ± 6.22 h/d, whereas that with Omeprazole was 18.54 ± 3.14 h/d ($P < 0.05$). Proton pump antagonist could elevate serum gastrin levels, Lansoprazole was more significant than Omeprazole ($P < 0.05$).

CONCLUSION: This study demonstrated intragastric pH through determination of intragastric 24-h levels in 38 normal individuals it showed 31.58% of them had physiological spontaneous reflux at night. It also showed that Lansoprazole has stronger acid inhibition and feedback increase of serum gastrin level than those of Omeprazole.

Key words: Intragastric pH; Rhythm; Proton pump antagonists; Serum gastrin levels

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