

## Esophageal motor pattern during fasting and postprandial states in non severe reflux esophagitis

Hui-Min Liu, Mei-Yun Ke, Zhi-Feng Wang, Cheng-Ming Gu, Yuan-Fang Chen

Hui-Min Liu, Mei-Yun Ke, Zhi-Feng Wang, Cheng-Ming Gu, Yuan-Fang Chen, Department of Gastroenterology, Peking Union Medical College Hospital, Chinese Academy of Medical Science, Beijing, China

Author contributions: All authors contributed equally to the work.

Original title: *China National Journal of New Gastroenterology* (1995-1997) renamed *World Journal of Gastroenterology* (1998-).

Received: December 11, 1995

Revised: February 21, 1996

Accepted: March 15, 1996

Published online: September 15, 1996

### Abstract

**AIM:** It is well known that lower esophageal sphincter (LES) dysfunction is a key factor in development of gastroesophageal reflux disease (GERD), however, effective peristalsis is a critical determinant of esophageal acid clearance. The aims of our study were to investigate the LES pressure (LESP) and esophageal peristaltic function in patients with non severe reflux esophagitis (NSRE) during fasting and postprandial states.

**METHODS:** Ten patients with NSRE confirmed by endoscopy (grade I and II) and 10 age matched healthy subjects (HS) participated in this study. An upper gut manometry was performed with an 8 lumen Dent sleeve catheter through a capillary pneumohydraulic perfused system and polygraph. The catheter was positioned under fluoroscopy, 2 side holes at the antrum, 3 cm in interval, 3 side holes from the mid esophagus to distal esophagus, sleeve at LES area. Five hour recording was carried out, 3 h for fasting (migrating motor complex, MMC) and 2 h after meal. Swallows of water were used for evaluation of esophageal function.

**RESULTS:** (1) LESP during the phase I, II and of MMC were  $23.3 \pm 3.0$ ,  $29.2 \pm 3.0$ ,  $53.4 \pm 6.1$  mmHg in HS and  $16.1 \pm 2.7$ ,  $30.5 \pm 4.1$ ,  $43.4 \pm 6.0$  mmHg in NSRE. There were statistical significance

among each phase in both group ( $P < 0.01$ ). (2) LESP significantly decreased 1 h after meal in HS ( $11.75 \pm 2.8$  mmHg, vs phase I,  $P < 0.01$ ), but not in NSRE ( $13.75 \pm 3.37$  mmHg,  $P = 0.59$ ). (3) Primary peristaltic velocity (PV) in fasting significantly decreased in NSRE when compared with HS at the mid esophagus ( $2.48 \pm 0.30$  cm/s vs  $4.10 \pm 0.86$  cm/s,  $P < 0.01$ ) and the distal esophagus ( $3.16 \pm 0.10$  cm/s vs  $1.78 \pm 0.27$  cm/s,  $P < 0.01$ ). (4) Peristaltic wave duration (D) was prolonged in NSRE compared with HS at the middle ( $4.77 \pm 0.26$  s vs  $3.36 \pm 0.18$  s,  $P < 0.01$ ), the distal 1 ( $4.55 \pm 0.24$  s vs  $3.59 \pm 0.16$  s,  $P < 0.01$ ) and the distal 2 esophagus ( $3.95 \pm 0.28$  s vs  $3.31 \pm 0.23$  s,  $P = 0.08$ ). Wave amplitude (A) and PV decreased 1 h after meal when compared with HS at the mid esophagus ( $54.8 \pm 7.4$  mmHg vs  $70.0 \pm 6.0$  mmHg,  $P = 0.12$ ), the distal 1 ( $78.0 \pm 9.2$  mmHg vs  $110.2 \pm 7.7$  mmHg,  $P < 0.01$ ) and the distal 2 ( $62.35 \pm 11.2$  mmHg vs  $94.55 \pm 7.81$  mmHg,  $P < 0.05$ ), which remained similar at the 2<sup>nd</sup> hour in both groups. (5) Incidence of peristaltic contraction following water swallows were 88% at the mid esophagus and 47% at the distal esophagus in NSRE, 88% (NS) and 70% ( $P < 0.05$ ) in HS, respectively.

**CONCLUSIONS:** (1) Variations of LESP were similar in HS and NSRE groups, LESP could be normal, even increased, influenced by MMC activity and meal. (2) The abnormal changes predominantly appeared at the distal esophagus in NSRE. Our data suggested that dysfunction of esophageal primary peristalsis may result in acid clearance delay and play a more important role in the pathogenesis of NSRE.

**Key words:** Reflux esophagitis; Esophageal manometry; Migrating motor complex

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Liu HM, Ke MY, Wang ZF, Gu CM, Chen YF. Esophageal motor pattern during fasting and postprandial states in non-severe reflux esophagitis. *World J Gastroenterol* 1996; 2(Suppl1): 147 Available from: URL: <http://www.wjgnet.com/1007-9327/full/v2/iSuppl1/147.htm> DOI: <http://dx.doi.org/10.3748/wjg.v2.iSuppl1.147>

E- Editor: Liu WX



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