

## 24-h ambulatory esophageal pH monitoring of gastroesophageal reflux in children

Mi-Zu Jiang, Rui-Yun Ye, Bi-You Ou

Mi-Zu Jiang, Rui-Yun Ye, Bi-You Ou, Affiliated Children's Hospital, Zhejiang Medical University, Hangzhou, Zhejiang Province, China

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### Abstract

**AIM:** Gastroesophageal reflux (GER) is common in both adults and infants. Although in most cases it is benign and transient, GER in infancy and childhood is occasionally associated with significant complications, such as under development, severe esophagitis, aspiration syndromes and even mortality. The role of the upper gastrointestinal barium test has been questioned because of poor sensitivity and specificity. Over the last 10 years, 24-h lower esophageal pH monitoring has been increasingly established as the gold standard for documenting GER.

**METHODS:** To establish the diagnostic criterion for GER in children and to understand the usefulness of 24-h esophageal pH monitoring for assessing GER and to study the characteristic of GER in children. A 24-h lower esophageal pH monitoring was carried out in 64 children with suspected gastroesophageal reflux (GER) in ages ranging between 38 d to 13 years. Twenty asymptomatic cases served as controls. The catheter (2.1 mm in diameter) containing one antimony pH sensor was positioned with the electrode 3 cm above the superior border of the manometrically determined LES and then connected to the recorder. Each period longer than 15 s with a pH <

4.0 is called a reflux episode.

**RESULTS:** The results showed 35 cases to be GER, and among them 12 cases to be hiatus hernia. Twelve cases (9 of 12 hiatus hernia) were reexamined after anti reflux treatment. 10 parameters of both simple GER and hiatus hernia differed significantly from controls except the number of reflux episodes and reflux index. In simple GER the duration of the longest episode and mean duration of reflux episode were higher in the supine position than in the upright position ( $P < 0.05$ ). In hiatus hernia the duration of the longest episode; The total time of pH < 4, the percentage of pH < 4 in total period and mean duration of reflux episodes were higher in the supine position than in the upright position ( $P < 0.05$ ). In the supine position the reflux index was lower in both simple GER and hiatus hernia. Specificity of all parameters was satisfactory. Sensitivity of Boix Ochoa score and the total percentage of pH < 4 was the highest among them and the number of reflux time reduced significantly after anti reflux treatment.

**CONCLUSION:** The diagnostic criterion for GER in children has been established, that is, Boix Ochoa score is higher than 11.6 and the total percentage of time with pH < 4 is more than 2.0%. Pathological GER in children is more serious in the supine position. Pathological GER in children is more serious in the supine position. The study indicated that 24-h esophageal pH monitoring is safe and acceptable for children and is valuable in diagnosing and investigating GER and evaluating the efficiency of management.

**Key words:** Gastroesophageal reflux; Esophageal pH monitoring

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