

GASTROESOPHAGEAL REFLUX IN INFANTS

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Gastroesophageal reflux (GER) is defined as the passage of gastric contents (saliva, ingested food and drink, acid, pepsin, pancreatic, and biliary secretions) into the esophagus with or without regurgitation (De *et al*, 2001). This process is in fact a normal physiological phenomenon occurring several times per day in healthy infants. Regurgitation is defined as the passage of refluxed contents into the pharynx, mouth, or from the mouth (De *et al*, 2001). Regurgitation in infants is frequent, non-specific, and common. It is regarded as physiological if there is no associated symptom or complications.

It is interesting to note that a number of epidemiological studies point to the fact that most regurgitations in infants occur in the first six months of age (Fig 1) (Nelson *et al*, 1997; Heine *et al*, 2002; Martin *et al*, 2002; Miyazawa *et al*, 2002; Hegar *et al*, 2004, 2008, 2009). In addition, a study in Indonesia shows that a child with exclusive breastfeeding has less frequent regurgitation than formula-fed baby (Hegar *et al*, 2004). This is further evidence to support breast-feeding campaign (Hegar *et al*, 2004).

Gastroesophageal reflux disease (GERD) is present when reflux of gastric contents causes troublesome symptoms and/or complications, which may vary with age. It is somewhat difficult to establish

with certainty the 'typical reflux syndrome,' because children below 8 years old possess limited cognitive ability, and therefore cannot reliably report symptoms in a reproducible way.

Many factors are considered as contributing factors to GERD, most notably the transient lower esophageal relaxation mechanism (De *et al*, 2001). Other potential factors contributing to GER include an increase in intra-abdominal pressure, such as caused by straining; reduced esophageal capacitance; and decreased gastric compliance. A whole range of symptoms that may be associated with GER include recurrent regurgitation with/without vomiting and irritability, and irritability of infants. The much-debated question is how frequent and specific must the symptoms of irritability be in order to make a diagnosis. The data from Indonesia points to infant feeding regurgitation being common, accounting for a heightened anxiety among mothers (Nelson *et al*, 1997).

It is important to determine which children have GERD so that optimal treatment can be offered while avoiding costly and potentially invasive diagnostic testing. There is no symptom to date that is diagnostic of GERD or predicts response to therapy in infants. A number of investigations have been profiled. There is no one gold standard test. Barium meal is not a

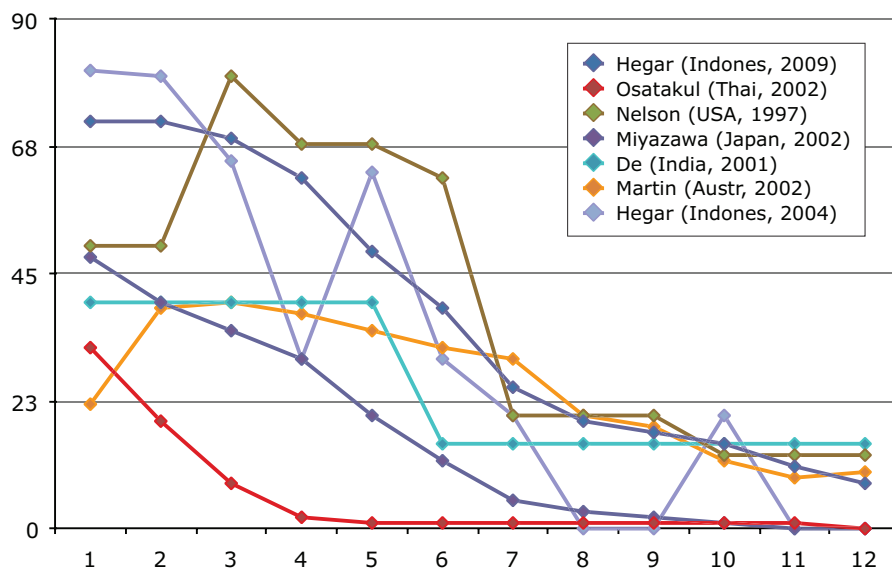


Fig 1—Natural evolution of regurgitation in health infants (De *et al*, 2001; Nelson *et al*, 1997; Heine *et al*, 2002; Martin *et al*, 2002; Miyazawa *et al*, 2002; Osatakul *et al*, 2002; Hegar *et al*, 2004, 2008, 2009).

useful investigation in making the diagnosis. Questionnaire is the first and foremost method. Endoscopy with/without biopsy, and pH-metry are used while impedance metry is also a possibility, but expensive.

Previously infants with unexplained crying and/or distress would have been thoroughly screened for GERD. Lessons over the last decade, however, have proven that reflux is not a common cause of unexplained crying, irritability, or distressed behavior in otherwise healthy infants. There is therefore no evidence to support the empiric use of acid suppression for the treatment of irritable infants. The incidence of GERD or esophagitis in irritable infants remains contradictory. Overall study results appear to be unhelpful: with normal pH monitoring in the majority with esophagitis, only one half of irritable infants with con-

firmed acid GER disease and/or histological esophagitis, and very low specificity of symptoms, pH monitoring and impedance (Osatakul *et al*, 2002; Vandenplas *et al*, 2009).

A step-up approach on the management of GERD is recommended. It consists of parental reassurance, positional treatment, and dietary recommendations. Experiences from Indonesia suggest that a careful history and physical examination, with attention to warning signs, is generally sufficient to establish the diagnosis of uncomplicated GER. The study from Indonesia on the natural evolution of infantile regurgitation versus the efficacy of thickened formula showed that even without the additives, infants improve after one month regardless (De *et al*, 2001; Hegar *et al*, 2004). With the use of rice cereal or bean

gum the process is somewhat quicker. The initial part of treatment should include lifestyle changes and Proton Pump Inhibitors (PPIs) therapy, and its effectiveness is monitored through symptom relief. It is now accepted that empiric trial of acid suppression as a diagnostic test in infants where symptoms suggestive of GERD are less specific is not justified and has no supportive evidence likewise. For an older child or adolescent with typical features then a trial of PPIs is reasonable for up to four weeks. It must be noted however that symptoms improvement following treatment does not confirm a diagnosis of GERD, because recovery may be spontaneous or occur from a placebo effect.

In conclusion, the diagnosis of GER(D) is still difficult in infants, because there are no specific symptoms and no validated diagnostic tool. It is often made clinically, based on the bothersome symptoms or signs that may be associated with GER. As for the therapy, one needs to balance between the efficacy and side effects.

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