

Childhood Functional Gastrointestinal Disorders: Neonate/Toddler



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In 2006, a consensus concerning functional gastrointestinal intestinal disorders in infants and toddlers was described. At that time, little evidence regarding epidemiology, pathophysiology, diagnostic workup, treatment strategies, and follow-up was available. Consequently, the criteria for the clinical entities were more experience based than evidence based. In the past decade, new insights have been gained about the different functional gastrointestinal intestinal disorders in these age groups. Based on those, further revisions have been made to the criteria. The description of infant colic has been expanded to include criteria for the general pediatrician and specific criteria for researchers. The greatest change was the addition of a paragraph regarding the neurobiology of pain in infants and toddlers, including the understanding of the neurodevelopment of nociception and of the wide array of factors that can impact the pain experience.

Keywords: Neonate; Toddler; Regurgitation; Colic; Constipation.

Infant and toddler functional gastrointestinal disorders (FGIDs) include a variable combination of often age-dependent, chronic, or recurrent symptoms not explained by structural or biochemical abnormalities. Functional symptoms during childhood sometimes accompany normal development (eg, infant regurgitation), or they can arise from maladaptive behavioral responses to internal or external stimuli (eg, retention of feces in the rectum often results from an experience with painful defecation). The clinical expression of an FGID varies with age, and depends on an individual's stage of development, particularly with regard to physiologic, autonomic, affective, and intellectual development. As the child gains the verbal skills necessary to report pain, it is then possible to diagnose pain-predominant FGIDs.

Through the first years, children cannot accurately report symptoms such as nausea or pain. The infant and preschool child cannot discriminate between emotional and physical distress. Therefore, clinicians depend on the reports and interpretations of the parents, who know their child best, and the observations of the clinician, who is trained to differentiate between health and illness.

The decision to seek medical care for symptoms arises from a caretaker's concern for the child. The threshold for concern varies with previous experiences and expectations, coping style, and perception of illness. For this reason, the office visit is not only about the child's symptom, but also about the family's fears. The clinician must not only make a diagnosis, but also recognize the impact of the symptom on the family's emotions and ability to function. Therefore, any intervention plan must attend to both the child and the family. Effective management depends on securing a therapeutic alliance with the parents.

Childhood FGIDs are not dangerous when the symptoms and caregiver's concerns are addressed and contained. Conversely, failed diagnosis and inappropriate treatments of functional symptoms may be the cause of needless physical and emotional suffering. Disability from a functional symptom is related to maladaptive coping with the symptom. In severe cases, well-meaning clinicians inadvertently co-create unnecessarily complex and costly solutions, as well as ongoing emotional stress that promotes disability.¹

This article provides a description, assessment, and analysis of each FGID that affects the neonate/toddler age group (Table 1). Figure 1 shows the age of presentation of FGIDs in the pediatric age group, and Table 2 shows a summary of the prevalence of FGIDs in this age group, as well as their pathophysiology and treatment. We will then review the developmental neurobiology of the pain response, as well as the assessment of pain in infants and toddlers.

I. Functional Gastrointestinal Disorders

G1. Infant Regurgitation

Reflux refers to retrograde involuntary movement of gastric contents in and out of the stomach, and is often

*Authors share co-first authorship.

Abbreviations used in this paper: CVS, cyclic vomiting syndrome; FC, functional constipation; FGID, functional gastrointestinal disorder; GERD, gastroesophageal reflux disease; NASPGHAN, North American Society of Pediatric Gastroenterology Hepatology and Nutrition.

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Table 1.G. Functional Gastrointestinal Disorders in Neonates and Toddlers

G1. Infant regurgitation
G2. Infant rumination syndrome
G3. Cyclic vomiting syndrome
G4. Infant colic
G5. Functional diarrhea
G6. Infant dyschezia
G7. Functional constipation

G1. Diagnostic Criteria for Infant Regurgitation

Must include both of the following in otherwise healthy infants 3 weeks to 12 months of age:

1. Regurgitation 2 or more times per day for 3 or more weeks
2. No retching, hematemesis, aspiration, apnea, failure to thrive, feeding or swallowing difficulties, or abnormal posturing

referred as gastroesophageal reflux.² When the reflux is high enough to be visualized it is called regurgitation. Regurgitation of stomach contents into the esophagus, mouth, and/or nose is common in infants and is within the expected range of behaviors in healthy infants. Infant regurgitation is the most common FGID in the first year of life.³ Recognition of infant regurgitation avoids unnecessary doctor visits and unnecessary investigations and therapy for gastroesophageal reflux disease (GERD).² Infant regurgitation is distinguished from vomiting, which is defined by a central nervous system reflex involving both autonomic and skeletal muscles in which gastric contents are forcefully expelled through the mouth because of coordinated movements of the small bowel, stomach, esophagus, and diaphragm. Regurgitation is also different from rumination, in which previously swallowed food is returned to the pharynx and mouth, chewed, and swallowed again. When the regurgitation of gastric contents causes complications or contributes to tissue damage or inflammation (eg, esophagitis, obstructive apnea, reactive airway disease, pulmonary aspiration, feeding and swallowing difficulties, or failure to thrive), it is called GERD.²

Rationale for change in diagnostic criteria. There are minor changes from Rome III. Recently, a position paper by the North American Society of Pediatric Gastroenterology Hepatology and Nutrition (NASPGHAN) and the European Society of Pediatric Gastroenterology Hepatology and Nutrition added “bothersome symptoms” as one criterion to differentiate infant regurgitation from GERD.³ The challenge with that definition is that quantitative methods to define “troublesome” are missing. Infants cannot communicate if they are bothered. Variations in clinician and parent interpretations of troublesome have resulted in unnecessary evaluation and treatment of many infants with regurgitation, not GERD. There is a lack of correlation between crying, irritability, and GER.⁴ GER is not a common cause of unexplained crying, irritability, or distressed behavior in otherwise healthy infants.² Therefore, we have elected to leave “troublesome” symptoms out of the criteria.

Clinical evaluation. Daily regurgitation is more common in young infants than in older infants and children, and is found in higher rates in neonates.⁵ A recent study of 1447 mothers throughout the United States showed a prevalence of infant regurgitation of 26% using Rome III criteria.³ Regurgitation occurs more than once a day in 41%–67% of healthy 4-month-old infants.^{2,6}

NEONATE/TODDLER

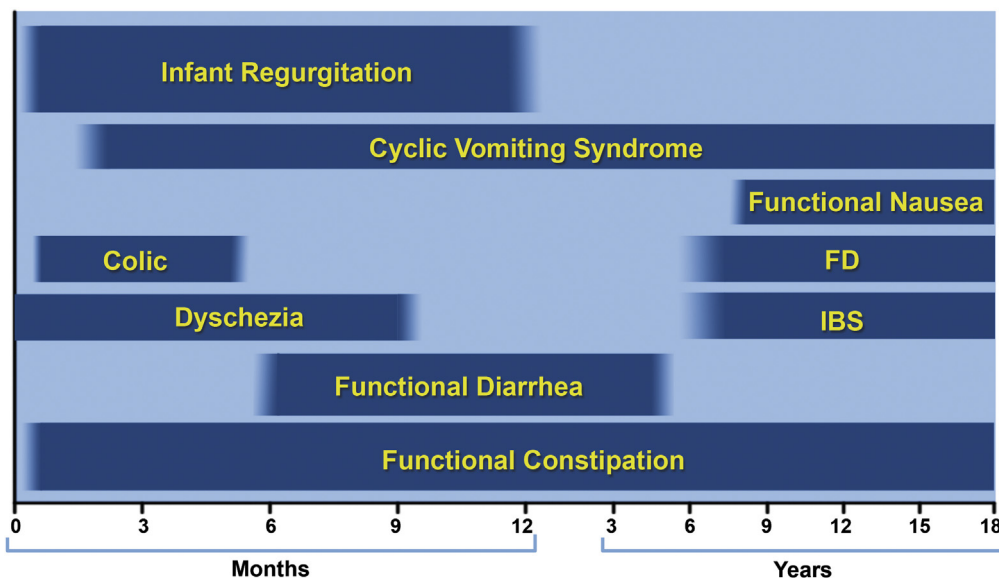


Figure 1. Age of presentation of FGIDs in pediatric patients. The bars show each diagnosis. Symptoms might begin earlier, as there is a time requirement to fulfill diagnostic criteria. IBS, irritable bowel syndrome; FD, functional dyspepsia.

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