"GASTROESOPHAGEAL REFLUX DISEASE"

Definition of GERD (by WHO)

It is a chronic relapsing disease which characterized by inflammatory damage to the distal esophagus due to repeated throws into it of gastric and / or duodenal contents.

Epidemiology

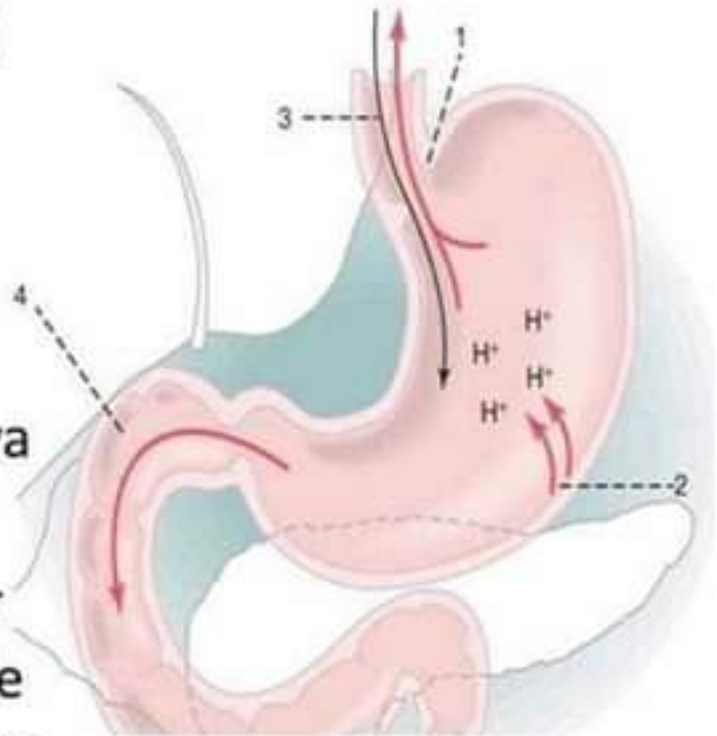
GERD is a global disease, and evidence suggests that its prevalence is increasing. Prevalence estimates show considerable geographic variation, but it is only in East Asia that prevalence estimates are currently consistently lower than 10%. The high prevalence of GERD, and hence of troublesome symptoms, has significant societal consequences, impacting adversely on work productivity and many other quality- of-life aspects for individual patients.

Factors contributing development of gastroesophageal reflux disease (GERD)

- Failure of antireflux barrier
- Reduced motor-evacuation function of the stomachIncreased
- intra-abdominal pressure
- Reduction of esophageal clearance
- Reduced resistance of the esophageal mucosa
- Inflammatory-erosive-ulcerative diseases of the gastroduodenal zone

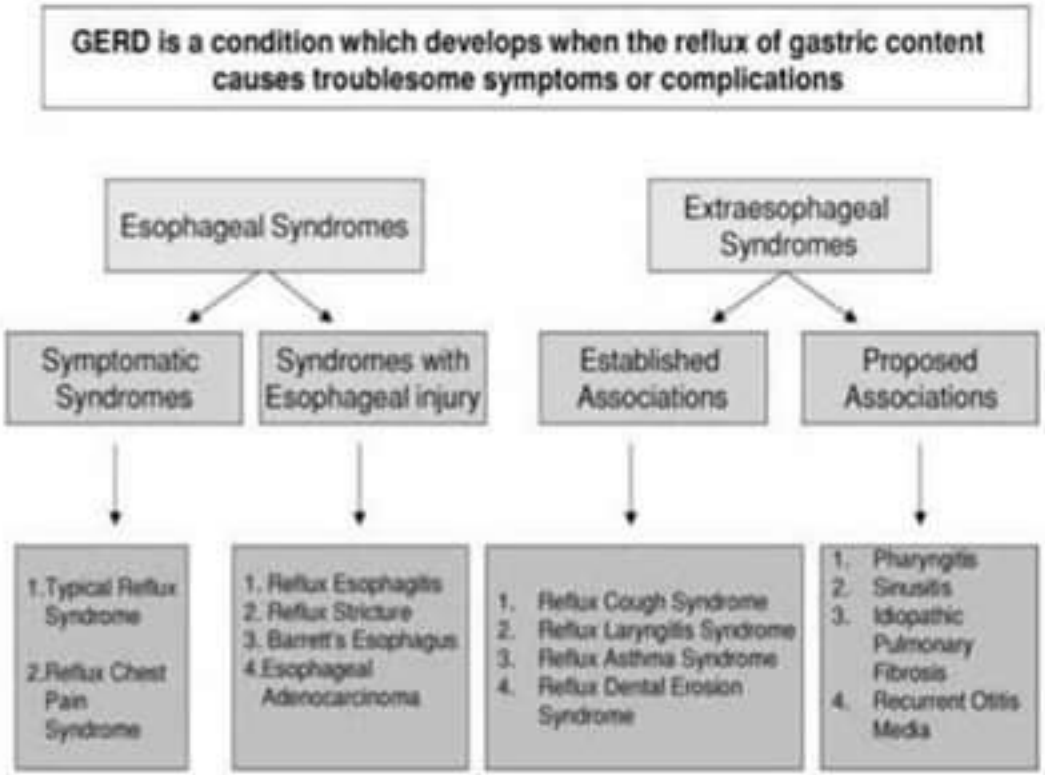
Pathogenesis of GERD

1. impaired lower esophageal sphincter
2. hypersecretion of acid
3. decreased acid clearance resulting from impaired peristalsis or abnormal saliva production
4. delayed gastric emptying or duodenogastric reflux of bile salts and pancreatic enzymes.



Clinical symptoms

Montreal Classification of GERD

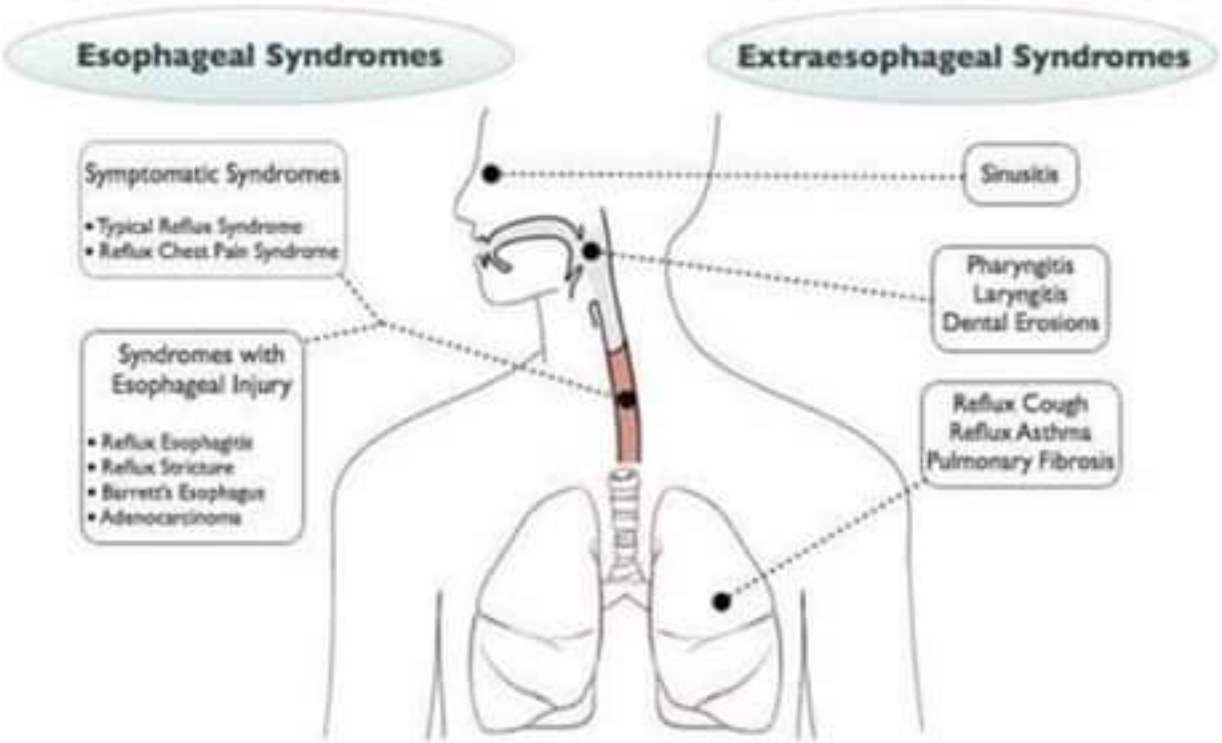


From Vakil N et al. Am J Gastroenterol 2006;101:1900-20.

Clinical symptoms

The main extraesophageal manifestations of GERD

GERD is a condition that develops when reflux of stomach contents causes troublesome symptoms and/or complications



- Bronchopulmonary syndrome
- ENT syndrome
- Dental syndrome
- Anemic syndrome
- Cardiac syndrome

Bronchopulmonary syndrome

- Chronic cough
- Paroxysmal sleep
- apnea
- Bouts of paroxysmal cough
- Reflux-induced asthma
- COPD
- Less often-the development of bronchiectasis, aspiration pneumonia, lung abscesses, idiopathic pulmonary fibrosis, hemoptysis, lung atelectasis.

Otolaryngological syndrome

- inflammation of the nasopharynx
- Pharyngitis, laryngitis, laryngeal croup
- Ulcers, granulomas, and polyps of the vocal folds
- Stenosis of the larynx
- Larynx cancer
- Rhinitis

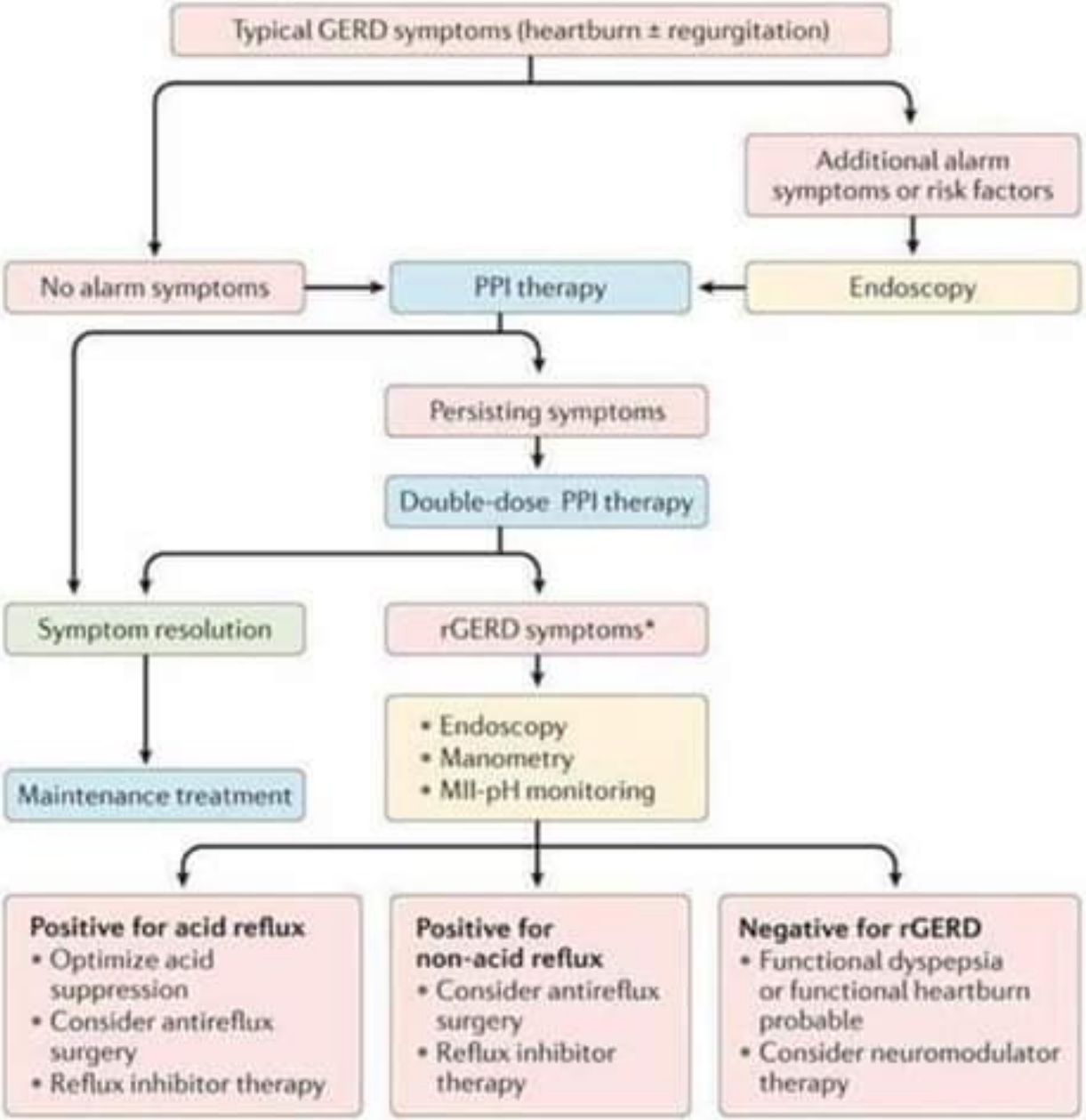
Anemic syndrome

Manifested by the development of posthemorrhagic hypochromic iron-deficiency anemia. Occurs due to chronic bleeding from erosion and / or ulcers of the esophagus.

Cardiac syndrome

- Chest pain simulating angina
- Arrhythmias and cardiac conduction
- Myocardial ischemia
- Reflex angina
- Blood pressure rises.


GERD Diagnosis
physical exam
symptoms evaluation
upper endoscopy
esophageal manometry
verywell



Nature Reviews | Gastroenterology & Hepatology

DIAGNOSING (TESTS)

- ✓Gastroscopy
- ✓Manometry
- ✓Radiology
- ✓Alkaline test
- ✓Histology

Classification of GERD was done according to Savary-Miller (1978)

0 stage	GERD without esophagitis (endoscopically negative)
1 stage	Individual non-merging erosion and / or erythema of the distal esophagus
2 stage	Merging, but not capturing the entire surface of the mucous erosion
3 stage	Ulcerative lesions of n / 3 esophagus, merging and covering the entire surface of the esophagus
4 stage	Chronic ulcer of the esophagus, stenosis, Barrett's esophagus (cylindrical metaplasia of the esophagus mucosa)

From the esophagus of patient A.
Hernia, catarrhal esophagitis.

the esophagus of the patient L.
Chronic erosive esophagitis.

- Patient b's esophagus. Hernia, catarrhal esophagitis.

stomach patient L.
Chronic reflux-gastritis

TREATMENT

- I stage. Lifestyle change
- Stage II. Medicamental antireflux therapy
- Stage III. Supporting therapy

Lifestyle changing

- Fight against overweight
- Fractional power
- Walking for 30 minutes after meals
- Don't lie down after eating, after (1-1,5 hours)
- Sleep with the head end of the bed raised by 15 cm
- Do not eat before bedtime
- Do not wear tight clothes and tight belts
- Refusal of food reducing the tone of the NPS and enhancing gas formation (fatty foods, chocolate, onion, garlic, pepper, caffeine-containing and carbonated drinks, citrus, tomatoes)
- Refusal of alcohol
- Refusal of smoking.Weight loss)If possible, the refusal of drugs that reduce the tone of the NPSAvoid abdominal tension

Basic antisecretory drugs and their daily doses

- Inhibitors of the proton pump - the "gold standard" in the treatment
- Omeprazole (omez, omeprazole, losek, zerocide) 20 mg 2 times
- Lansoprazole 30 mg 2 times
- Pantoprazole (controloc) 40 mg 2 times
- Rabeprazol (pariet) 20 mg 2 times
- Esomeprazole (nexium) 40 mg 1 time/day

H2-blockers Ranitidine (zantac, ranisan) 150 mg 2 times
Famotidine (ulfamid, gastrosidin, peptide, leader, kvamatel) 20 and 40 mg 2 times
Nizatidine (axid) 150 mg 2 times
Roxatidine 150 mg 2 times

Alginates, aluminum-containing antacids

- Gaviscon 2-4 TB (carefully chew the tablets) or 10-20 ml suspension after a meal or n / a night (if gaviscon Forte take half the dose)
- Topalkan 2 tablets (carefully chew) or 1 bag 3 times a day before meals
- Almagel 5-10 ml suspension after meals and at night, Algeldrate / magnesium hydroxide 1-2 tablets, or 5-10 ml suspension
- Maalox 1-2 tablets or 1-2 bags after meals and at night Aluminium phosphate gel for 1-2 sachets after meals and at night
- Gastal 1-2 tablets after meals and at night,
- Gelusil-Lak 1 TB or 1 sachet after meals and at night.

- Gastroproktektors
- Misoprostol (cytotec), 200 mcg, 3 times a day immediately after meals and h/night,
- De Nol, 120 mg 1-1 hours before meals and at night
- Venter (sucralfate), 0.5-1G 3 times a day for 1-1 hours before eating and before bedtime

- Prokinetics
- 1. Itoprida hydrochloride (ganaton) inside 50 mg 3 times a day before meals.
- 2. Motilium (domperidone), inside 10 mg 3-4 times a day before meals or 30 mg in candles.

Complications of GERD

- ✓Stricture of the esophagus (7-23%)
- ✓Esophageal ulcers (5%)
- ✓Bleeding from erosions and ulcers (2%)
- ✓Barrett's Esophagus (8-20%)
- ✓Esophagus cancerReflex stop of breathing, as a consequence of reflux and laryngeal spasm

Definition of GERD (by WHO)

It is a chronic relapsing disease which characterized by inflammatory damage to the distal esophagus due to repeated throws into it of gastric and / or duodenal contents.

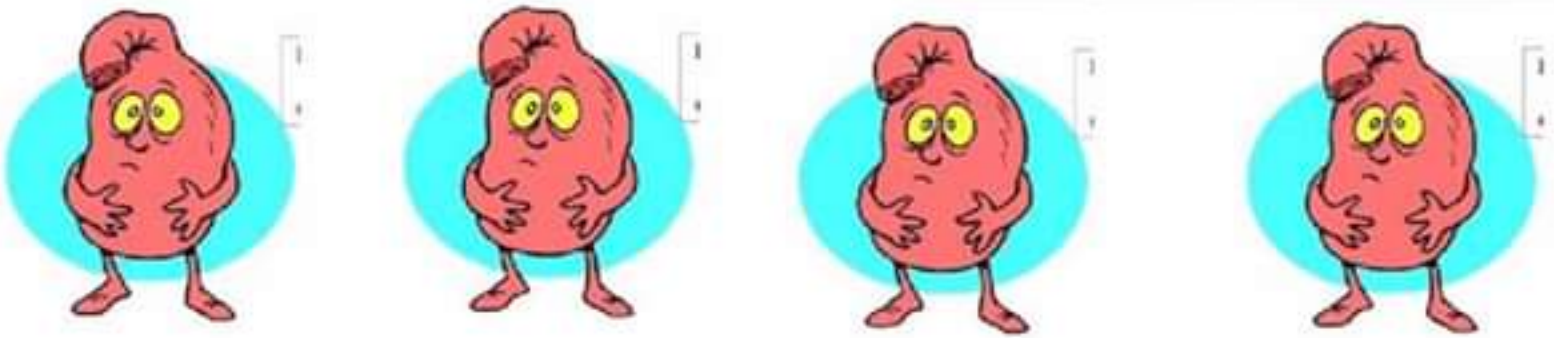
DIAGNOSING (TESTS)

- ✓Gastroscopy
- ✓Manometry
- ✓Radiology
- ✓Alkaline test
- ✓Histology

Like Medical Information & MCQs By Dr NM Noori

GERD in Children

- Definition
- Pathophysiology
- Prevalence and Incidence
- Symptoms and Complications
- Impact on Life
- Diagnosis
- Management



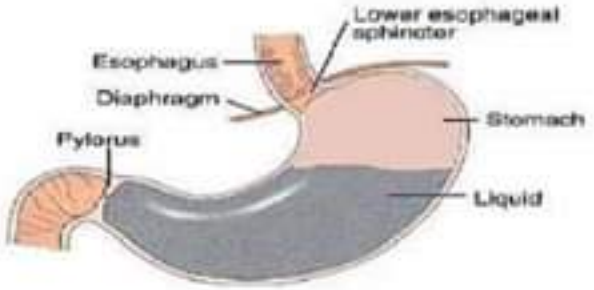
Gastroesophageal reflux disease (GERD)

- **Gastroesophageal reflux disease (GERD)** is the most common esophageal disorder in children of all ages.

GER	• Passage of gastric contents into the esophagus.
GERD	• Reflux of gastric contents causes troublesome symptoms and/or complications.
Regurgitation	• Passage of refluxed gastric contents into oral pharynx.
Vomiting	• Expulsion of reflux gastric contents from the mouth.

Pathophysiology

- **Factors determining the esophageal manifestations of reflux include**
- the duration of esophageal exposure (a product of the frequency and duration of reflux episodes),
- the causticity of the refluxate, and
- the susceptibility of the esophagus to damage.
- Note: The LES, supported by the crura of the diaphragm at the gastroesophageal junction, together with valvelike functions of the esophagogastric junction anatomy, form the **antireflux barrier.**

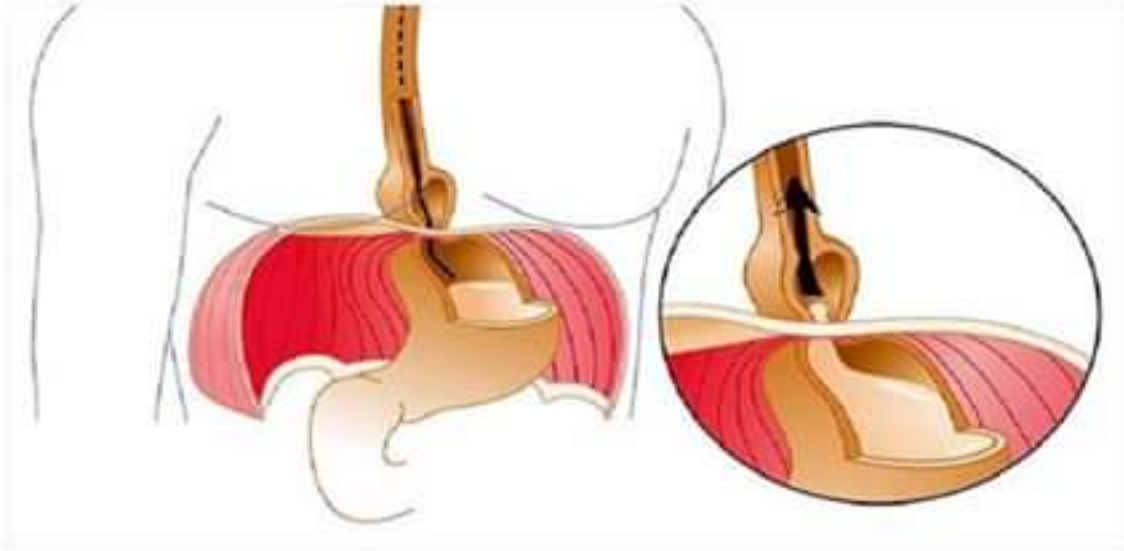


Pathophysiology

- **In the context of even the normal intra-abdominal pressure augmentations that occur during daily life, the frequency of reflux episodes is increased :**
  - by insufficient LES tone,
  - by abnormal frequency of LES relaxations, and
  - by hiatal herniation that prevents the LES pressure from being proportionately augmented by the crura during abdominal straining.
  - Normal intra-abdominal pressure augmentations may be further exacerbated by straining or respiratory efforts.

Pathophysiology

- **The duration of reflux episodes** is increased by lack of swallowing (e.g., during sleep) and by defective esophageal peristalsis.
- Vicious cycles ensue because chronic esophagitis produces esophageal peristaltic dysfunction (low-amplitude waves, propagation disturbances), decreased LES tone, and inflammatory esophageal shortening that induces hiatal herniation, all worsening reflux.

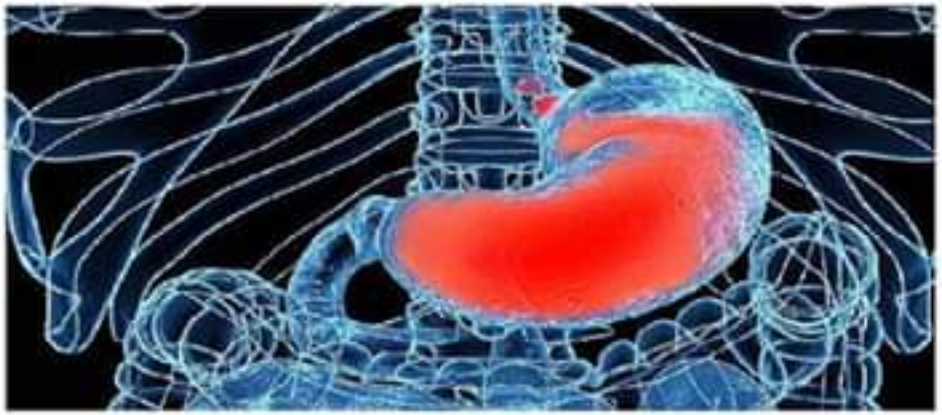


Pathophysiology

- **Transient LES relaxation (TLESR)** is the primary mechanism allowing reflux to occur.
- Whether GERD is caused by a higher frequency of TLESRs or by a greater incidence of reflux during TLESRs is debated; each is likely in different persons.
- **Straining** during a TLESR makes reflux more likely, as do positions that place the gastroesophageal junction below the air-fluid interface in the stomach.

Pathophysiology

- **Other factors influencing gastric pressure-volume dynamics, such as**
- increased movement,
- straining,
- obesity,
- large-volume or hyperosmolar meals, and
- increased respiratory effort (coughing, wheezing) can have the same effect.

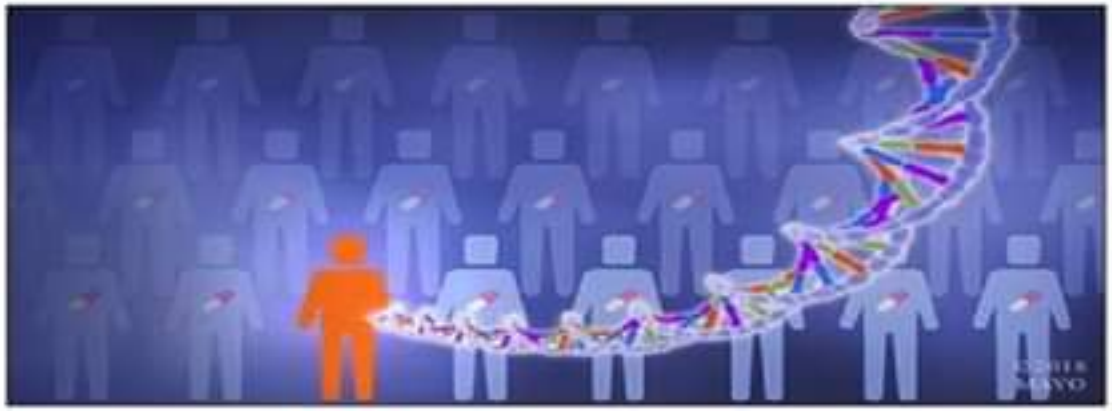


Epidemiology and Natural History

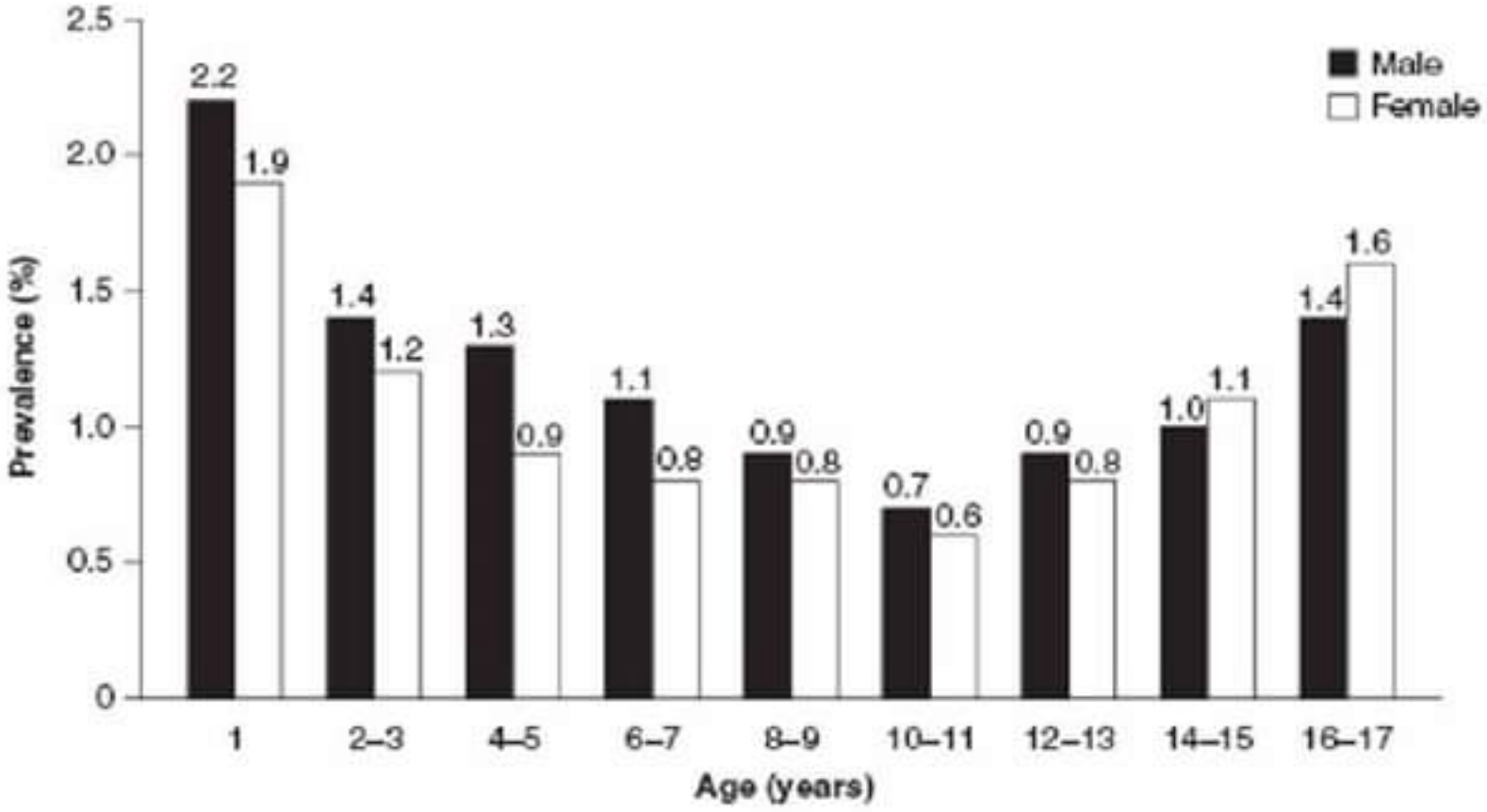
- **Infant reflux** becomes evident in the 1st few months of life, peaks at ~4 mo, and resolves in up to 88% by 12 mo and nearly all by 24 mo.
- Symptoms in **older children** tend to be chronic, waxing and waning, but completely resolving in no more than half, which resembles **adult** patterns.

Epidemiology and Natural History

- As a continuously variable and common disorder, **complex inheritance involving multiple genes** and **environmental factors** is likely.
- **GERD likely has genetic predispositions**: family clustering of GERD symptoms, endoscopic esophagitis, hiatal hernia, Barrett esophagus, and adenocarcinoma have been identified.
- A pediatric **autosomal dominant** form with otolaryngologic and respiratory manifestations has been located to chromosome 13q14, and the locus is termed GERD1.



Prevalence of GERD diagnosed in UK primary care during 2000-2005



Rodriguez G et al. Scand J Gastroenterol 2010;45:139–46.

GERD in children

Symptoms and complications

Clinical Manifestations

The Montréal definition of GERD

"GERD is a condition which develops when the reflux of stomach content causes troublesome symptoms and/or complications"

Esophageal Syndromes

Symptomatic Syndromes

- Typical Reflux Syndrome
- Reflux Chest Pain Syndrome

Syndromes with Esophageal Injury

- Reflux Esophagitis
- Reflux Stricture
- Barrett's Esophagus
- Adenocarcinoma

Extra-esophageal Syndromes

Established Associations

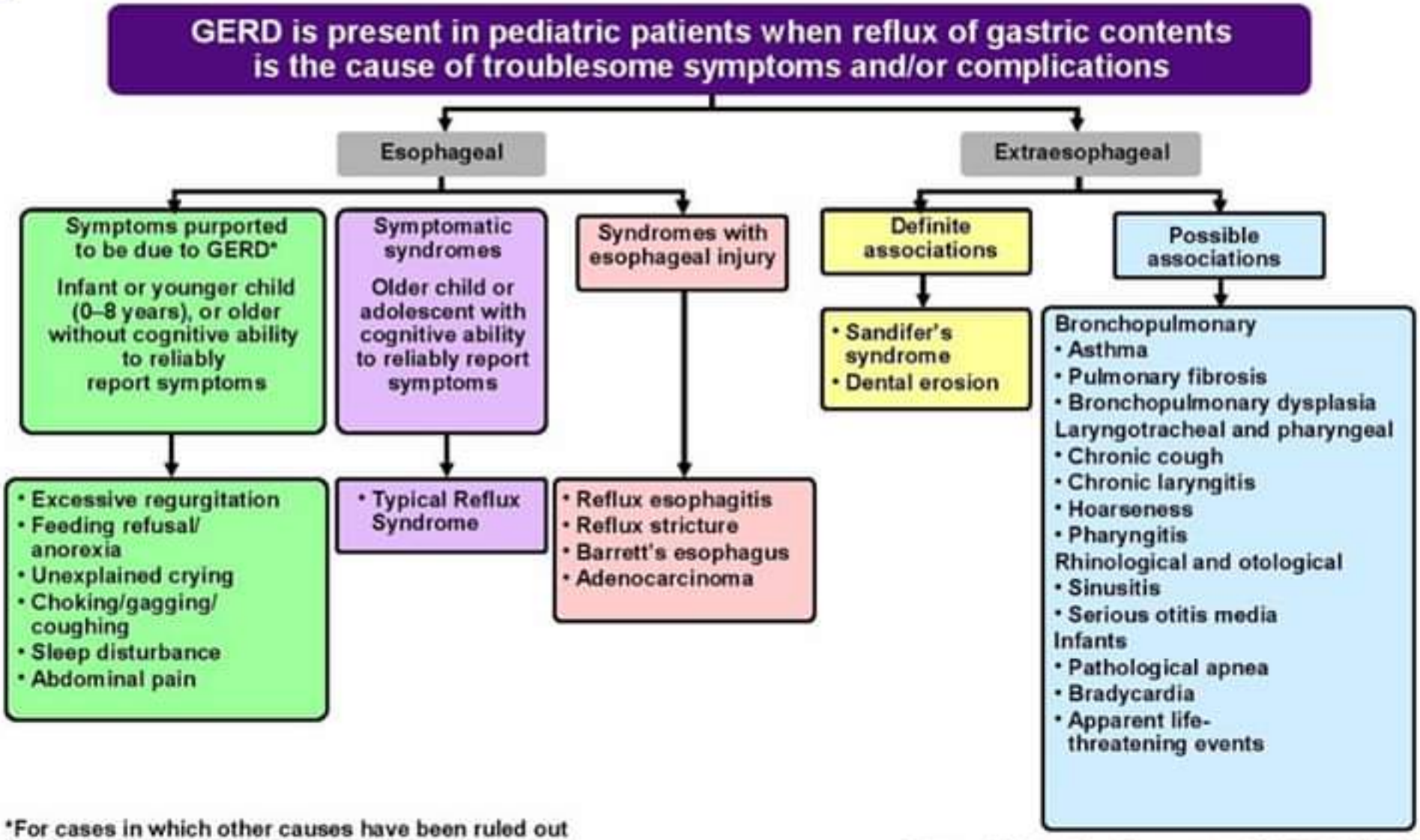
- Reflux Cough
- Reflux Laryngitis
- Reflux Asthma
- Reflux Dental Eros.

Proposed Associations

- Pharyngitis
- Sinusitis
- Idiopathic Pulmonary Fibrosis
- Recurrent Otitis Media

Vakil et al. Am J Gastroenterol 2006;101:1900–20

Global definition of GERD in children



*For cases in which other causes have been ruled out (e.g. food allergy, especially in infants)

Sherman PM et al. Am J Gasroenterol 2009;104:1278–95

Clinical Manifestations

- **Infantile reflux** manifests more often with regurgitation (especially postprandially), signs of esophagitis (irritability, arching, choking, gagging, feeding aversion), and resulting failure to thrive;
- symptoms resolve spontaneously in the majority by 12–24 mo.

Clinical Manifestations

- **Older children** can have regurgitation during the preschool years; complaints of abdominal and chest pain supervene in later childhood and adolescence.
- Occasional children present with neck contortions (arching, turning of head), designated **Sandifer syndrome.**

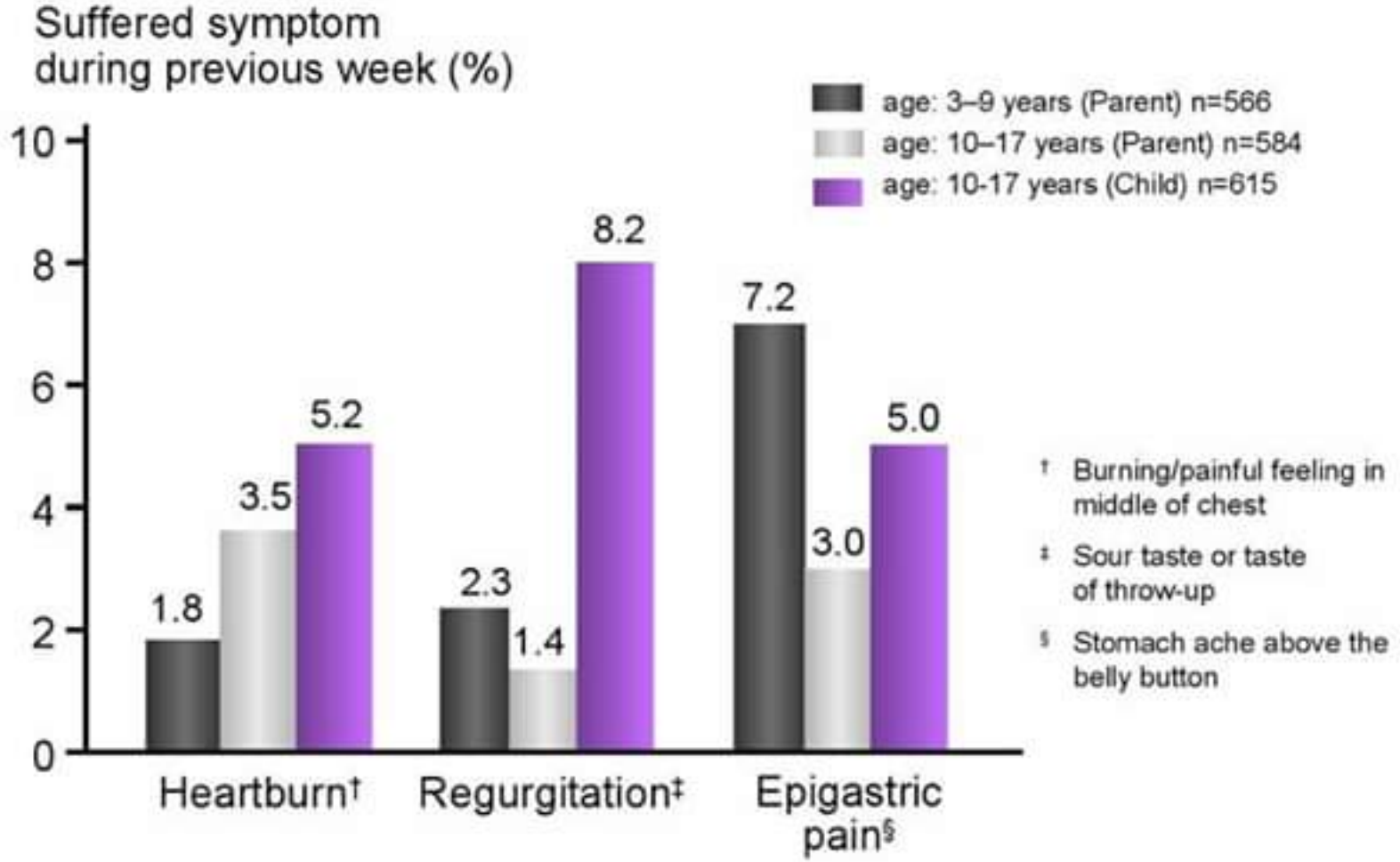
Clinical Manifestations

- The **respiratory presentations** are also age dependent:
- **GERD in infants** can manifest as obstructive apnea or as stridor or lower airway disease in which reflux complicates primary airway disease such as laryngomalacia or bronchopulmonary dysplasia.
- Otitis media, sinusitis, lymphoid hyperplasia, hoarseness, vocal cord nodules, and laryngeal edema have all been associated with **GERD**.

Clinical Manifestations

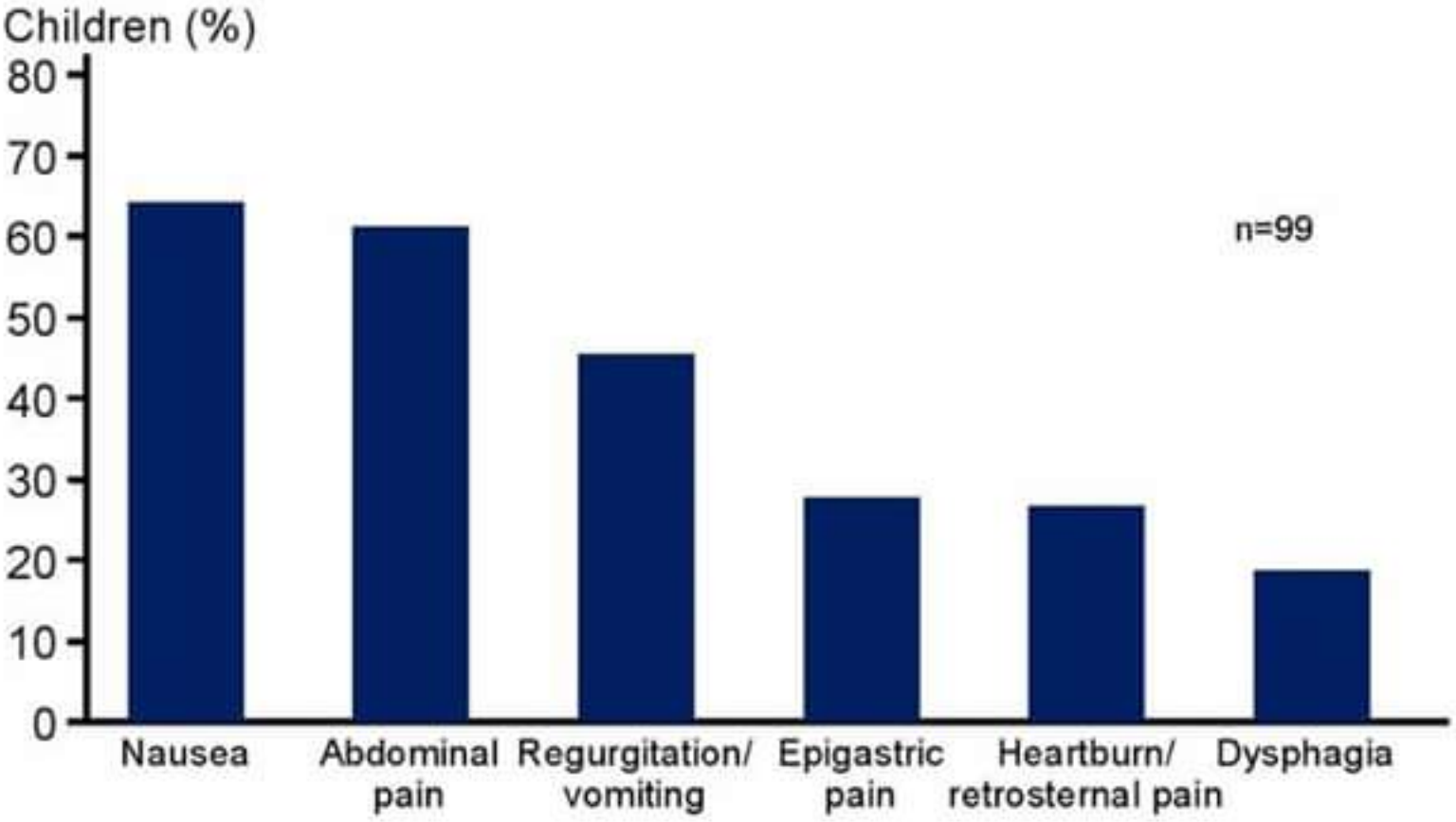
- **Airway manifestations in older children** are more commonly related to asthma or to otolaryngologic disease such as laryngitis or sinusitis.
- **Despite the high prevalence of GERD symptoms in asthmatic children, data showing direction of causality are conflicting.**

Prevalence of GERD symptoms in a pediatric practice-based survey in Chicago



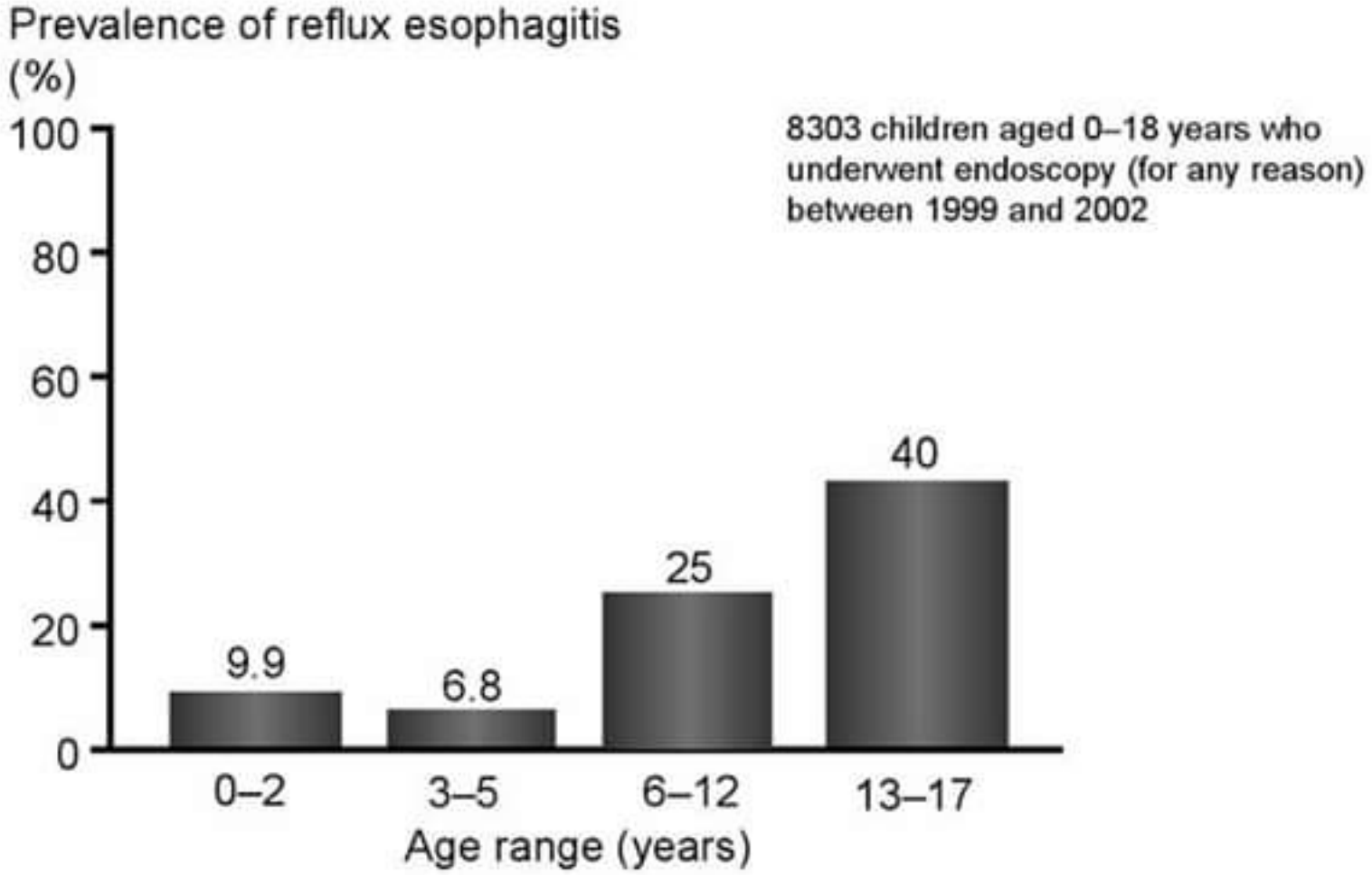
Nelson SP et al. Arch Pediatr Adolesc Med 2000;154:150–4

Symptoms among 7–16 year-olds with suspected GERD referred for pH-monitoring



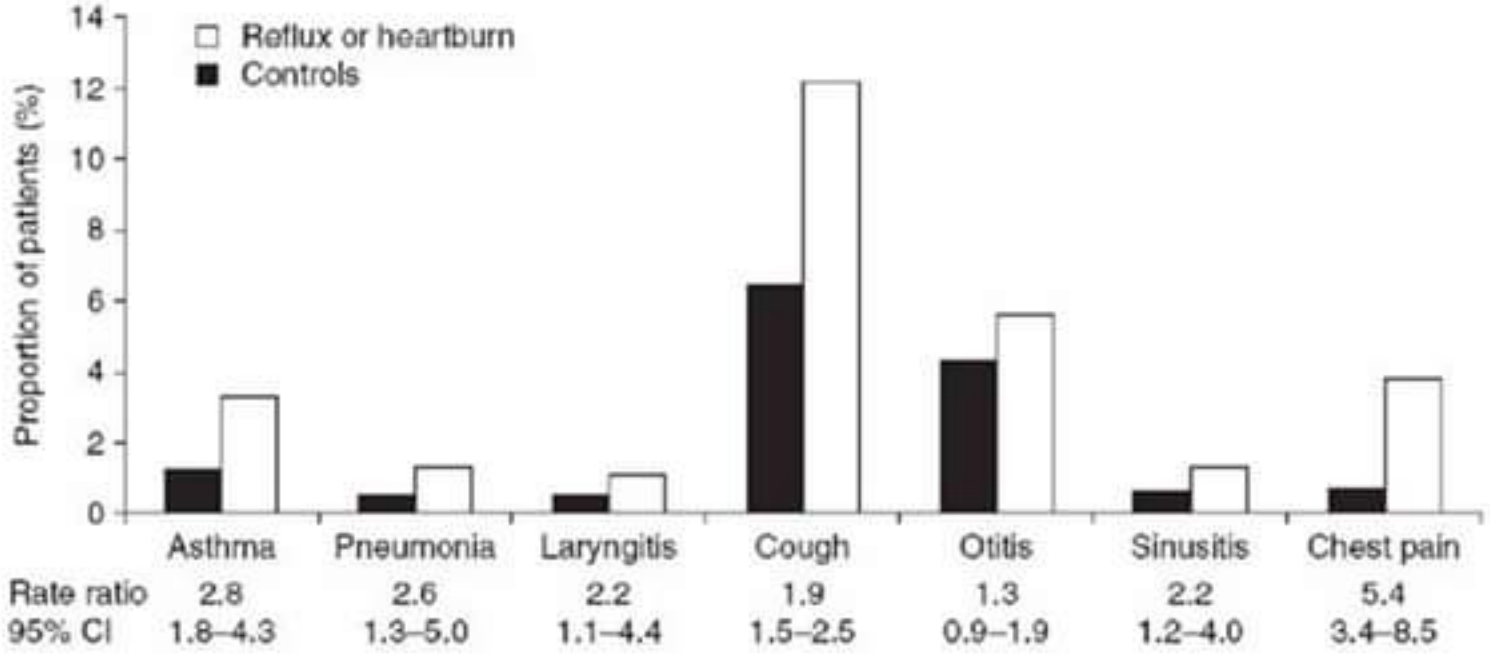
Stordal K et al. Scand J Gastroenterol 2005;40:636–40

Prevalence of reflux esophagitis in children increases with age



Gilger MA et al. J Pediatr Gastroenterol Nutr 2004;39 Suppl 1:S383–4

Risk of extraesophageal conditions



Ruiguomez A et al. Scan J Gastroenterol, 2010; 45: 814–821

GERD affects many aspects of children's lives

A survey among 205 parents of 1–17-year-old children with GERD showed that, in the past year, the condition affected:

- **Sleeping habits** in 69% of children
- **Eating habits** in 72% of children
- **School performance** in 53% of children
- **Social activities** in 48% of children

StrategyOne survey. Parents' Perspective on GERD

Childhood GERD impacts on the life of the caregiver

Caring for a child with GERD may affect many aspects of the **caregiver's life**, including :

- Mealtimes
- Housework and household expenses
- Emotional well-being
- Physical health
- Social life
- Relationships
- Employment

Kim J et al. Health Qual Life Outcomes 2005;3:5

Diagnostic approaches in suspected GERD

- **History and physical examination**

- **Diagnostic tests**
  - Barium contrast radiography
  - Esophageal pH monitoring
  - Endoscopy and biopsy

*MII=Multiple Intraluminal Impedance

1- Vandenplas Y et al. JPGN 2009; 49:498-547

Diagnosis

- For most of the typical GERD presentations, particularly in older children, a thorough **history and physical examination** suffice initially to reach the diagnosis.
- This initial evaluation aims to identify the pertinent **positives** in support of GERD and its complications and the **negatives** that make other diagnoses unlikely.