

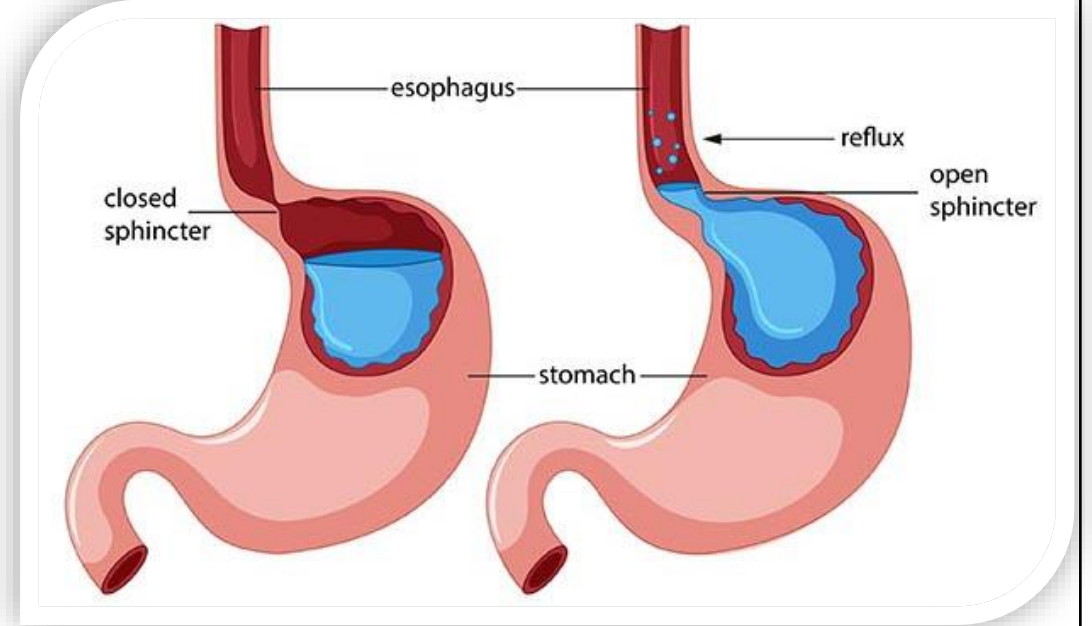
Gastroözofageal Reflü Hastalığı

Klinik Bulgular ve Komplikasyonlar

Dr. Atakan COMBA

Gastroözofageal reflü (GÖR)

- Mide içeriğinin istemsiz olarak özofagusa geri kaçıışı olarak tanımlanır.
 - (Regürjitasyon ve/veya kusma eşlik etsin, etmesin)
- Fizyolojik bir süreç
- Sağlıklı bebek, çocuk ve yetişkinlerde gün içerisinde bir çok kez olur.
- Bunların bir çoğu
 - Kısa süreli
 - Semptom Ø
 - Özofageal hasar Ø
 - Komplikasyon Ø



Regürjitasyon

- Mide içeriğinin orofarenks veya daha yukarıya kadar eforsuz olarak geriye kaçışına denir.
- İçeriğın ağızdan çıkıp çıkmaması önemli değildir.
- Ağızdan süt kesigi yada çökelek tarzında içerik gelebilir.

- Bebeklerde regürjitasyon sıktır.
- 3 ay altındaki bebeklerin %50'sinde görülür.
- Ancak bir yaş civarında tipik olarak azalır veya tamamen düzelir.
- Sık regürjitasyon olduğu halde
 - Kilo alımı ve beslenmesi iyi
 - Huzursuzluğu Ø
 - Alarm bulguları Ø
 - Happy spitters “mutlu tükürükçü” olarak adlandırılır.



Gastroözofagial Reflü Hastalığı (GÖRH)

- Gastroözofageal reflü
 - **Sıkıntı verici** semptomlar
 - Yaşam kalitesini etkiler ve/veya
 - Komplikasyonlara neden olursa
- Gastroözofageal reflü hastalığı (GÖRH) adını alır.

Klinik

- Gastroözofageal reflü hastalığına bağlı semptomlar yaşa göre değişkenlik gösterir.
- Özellikle bebeklerde ve küçük çocuklarda reflü-semptom ilişkisini saptamak zordur.

GÖRH' nin sistemlere göre belirti ve bulguları (Süt çocuđu döneminde)

Genel Belirti ve Bulgular

- Huzursuzluk,
- Aşırı ağlama
- Uyku bozukluđu
- Beslenme reddi
- Kilo alamama/ kilo kaybı
- Demir eksikliđi anemisi

Sindirim sistemi ile ilgili olanlar (özofageal/tipik)

- Sık regürjitasyon/kusma
- Retrosternal yanma/ ağrı/ (nonkardiyak göğüs ağrısı)
- Epigastrik ağrı
- Geğirme
- Disfaji/odinofaji (özofajit veya striktüre bađlı)
- Globus farengeus (boğazda takılma hissi)
- Yemek sonrası dolgunluk, erken doyma hissi
- Hematemez/melena

Atipik/Ekstraözofageal Belirti/Bulgular (Süt çocuđu Döneminde)

Sandifer
Sendromu

• Otolarengolojik belirtiler

- Larenjit
- Farenjit
- Sinüzit
- Otit
- Ses kısıklığı, boğuk ses
- Diş çürükleri- halitozis
- Vokal kord granulomları
- Subglottik stenoz

Solunum sistemi ile ilgili olanlar

- Hışıltı
- Stridor
- Kronik öksürük
- Siyanoz atakları/Apne atakları
- Ani bebek ölümü sendromu
- Hayatı tehdit edici olay (ALTE)
- Tekrarlayan pnömoni
- Aspirasyon pnömonisi (özellikle rekürren veya kronik)
- Astım

Besin reddi, aşırı ağlama ve huzursuzluk

- Özofageal ağrı



- Vaka kontrol serilerinde
- Kontrollü prospektif çalışma Ø



- Tekrarlayan regürjitasyon ve kusma
- **Kilo alımında azlık ve kilo kaybına** neden olabilir.
 - Yeterli kalori alımı
 - Yutma problemleri
 - Enfeksiyöz
 - Besin alerjileri
 - Anatomik
 - Metabolik
 - Nörolojik sorunlar
 - Çölyak



GÖRH- Uyku Bozukluğu

- Özofagusta inflamasyon, yanma ve ağrı ile ilişkilendirilir.
- Uyku sırasında
 - Yutkunma ↓
 - Özofagus peristaltizmi ↓
 - Reflü içeriğinin temizlenmesi ↓
 - Asite maruziyet ↑
 - Üst özofagus sfinkter basıncı ↓
 - Aspirasyon riski ↑



- 24 infant
- (Ort yaşı: 5 ay (3 hf, 10 ay)
- MII-pH metre ve Polisomnografi eş zamanlı değerlendirilmiş
- Uyku sırasında 331 reflü periyodunun 184'ü (%56) uyku bölünmesi ile sonuçlanmış
- 26'sı (%33) non-asit
- 52'si (%67) asit reflü
- Sonuç olarak GÖRH, infantlarda uyku bölünmesinin önemli bir nedeni olarak belirtildi. Non-asit reflü'de asit reflü kadar önemli bulundu.

Gastroesophageal Reflux Causing Sleep Interruptions in Infants

*Rodrigo Machado, †Frederick W. Woodley, †Beth Skaggs, †Carlo Di Lorenzo, ‡Mark Splaingard, and †Hayat Mousa

ABSTRACT

Background and Aim: Little is known about the relation between gastroesophageal reflux (GER) episodes and sleep interruptions in infants. The aim of the study was to evaluate the relationship between GER and the incidence of sleep interruptions in infants.

Methods: Study patients included 24 infants (younger than 1 year) referred for multichannel intraluminal impedance and esophageal pH monitoring with simultaneous polysomnography. Exclusion criteria were a previous fundoplication and studies lasting <20 hours. Tests were clinically indicated to investigate suspicion of GER-related apnea (17, 70.8%), stridor (6, 25%), noisy breathing (2, 8.3%), and cyanotic spells (1, 4.2%). Most patients presented with significant comorbidities (19, 79.2%).

Results: The number of nonacid GER (NAGER) per hour was greater during sleep time than during daytime and awakening following sleep onset (median 0.27 vs 1.85 and 1.45, $P < 0.01$). A total of 1204 (range 7–86 per infant) arousals in 24 infants was detected, 165 (13.7%) that followed GER episodes, and 43 (3.6%) that preceded GER episodes. Seven patients presented with a positive symptom association probability for arousals; 5 were exclusively because of NAGER. A positive symptom association probability for awakenings was detected in 9 patients; 4 were because of NAGER, 4 were because of AGER, and 1 was because of both NAGER and GER. Patients with awakenings related to GER presented longer mean clearance time of AGER during sleep (165.5 vs 92.8 seconds, $P = 0.03$).

Conclusions: GER was a frequent cause of interrupting sleep among our infant patients, and NAGER proved to be equally important as AGER for causing arousals and awakenings in infants.

Key Words: gastroesophageal reflux disease, impedance, infants, interrupted, sleep disorders

(*JPGN* 2013;56: 431–435)

apnea, recurrent aspiration, feeding difficulties, failure to thrive, stridor, and wheezing (2). Because of the high prevalence of regurgitation and severity of potential complications in infants, GER and GERD are among the leading causes of referral to pediatric gastroenterologists.

Although crying, fussiness, and nocturnal irritability have all been associated with GERD in infants, little is known regarding the effect of GER on sleep quality in infants (3). Infants are unique in that they are in the process of developing a mature sleep-wake cycle; a process is influenced by several cultural and physiologic factors (4). Indeed, sleep problems are reported by nearly one-third of all parents (of infants) during the first year of life, with a proportion remaining unchanged as they become older children (5,6) Furthermore, recent reports have failed to demonstrate any relation between crying or irritability and GERD (7,8).

In adults, awakenings caused by GER are frequently related to acid GER episodes (AGER) because awakenings are triggered by painful stimuli (9). AGER has also been associated with arousals in young infants (10). Nonacid GER (NAGER), however, plays a major role in this age group because feedings are more frequent and postprandial periods are proportionally greater, with more reflux episodes containing partially buffered gastric contents (11). NAGER can only be detected and subsequently prove to be related to symptoms using multichannel intraluminal impedance-esophageal pH monitoring (MII-pH), which allows assessment of esophageal exposure to bolus, independent of its pH. To our knowledge, there have been no reports of studies using MII-pH to evaluate the role of GER in infants with poor sleep quality. In the present study, we report findings on 24 infants who underwent clinically indicated simultaneous polysomnography (PSG) and MII-pH. Our aim was to retrospectively evaluate the relation between GER (both AGER and NAGER) and the quality of sleep in infants.

Atipik/Ekstraözefageal Belirtiler

Sandifer Sendromu

- Otolarengolojik belirtiler
- Larenjit
- Farenjit
- Sinüzit
- Otit
- Vokal kord granulomları
- Subglottik stenoz
- Ses kısıklığı, boğuk ses
- Diş çürükleri- halitozis

Solunum sistemi ile ilgili olanlar

- Hışıltı
- Stridor
- Kronik öksürük
- Siyanoz atakları/Apne atakları
- Ani bebek ölümü sendromu
- Hayatı tehdit edici olay (ALTE)
- Tekrarlayan pnömoni
- Aspirasyon pnömonisi (özellikle rekürren veya kronik)
- Astım

Sandifer sendromu



- Nadir
- Spesifik
- Bař, boyun, gövde, üst ekstremitelerde anormal hareket ve/veya postür
- Huzursuzluk, ağlama
- Oküler semptomlar
- Nöbet benzeri hareketler




Sandifer sendromu

- Hareketler
 - Ani başlangıçlı
 - Opistotonus tarzında baş boyun ve gövdeyi geriye atma
 - Boyunda torsiyon ve tortikollisin eşlik ettiği
- Distonik özelliktedir.





Etiyoloji?

- Manometri ve pH çalışmaları
- Başı geriye atmanın
 - Özofagus motilitesi 
 - Alt özofagus basıncı 
 - Asit klirensin temizlenmesi 
 - Çocuğun rahatlamasına neden olduğu gösterdi.

Cafarotti A, Bascietto C, Salvatore R, et al. A 6-month-old boy with uncontrollable dystonic posture of the neck. Sandifer syndrome. *Pediatr Ann.* 2014;43(1):17-19.

Puntis JW, Smith HL, Buick RG, Booth IW. Effect of dystonic movements on oesophageal peristalsis in Sandifer's syndrome. *Arch Dis Child.* 1989;64(9):1311-1313.

Sandifer sendromu

Gastroözofageal bileşke
aferent sinirleri



Boyun ve üst ekstremitate kasları
eferent lifleri

Frankel EA, et al.
Sandifer syndrome posturing: relation to abdominal wall contractions, gastroesophageal reflux, and fundoplication. *Dig Dis Sci.* 2006;51(4):635-640.
Gordon N. Sandifer's syndrome: investigations and treatment. *J Pediatr Neurol.* 2007;5:275-278.

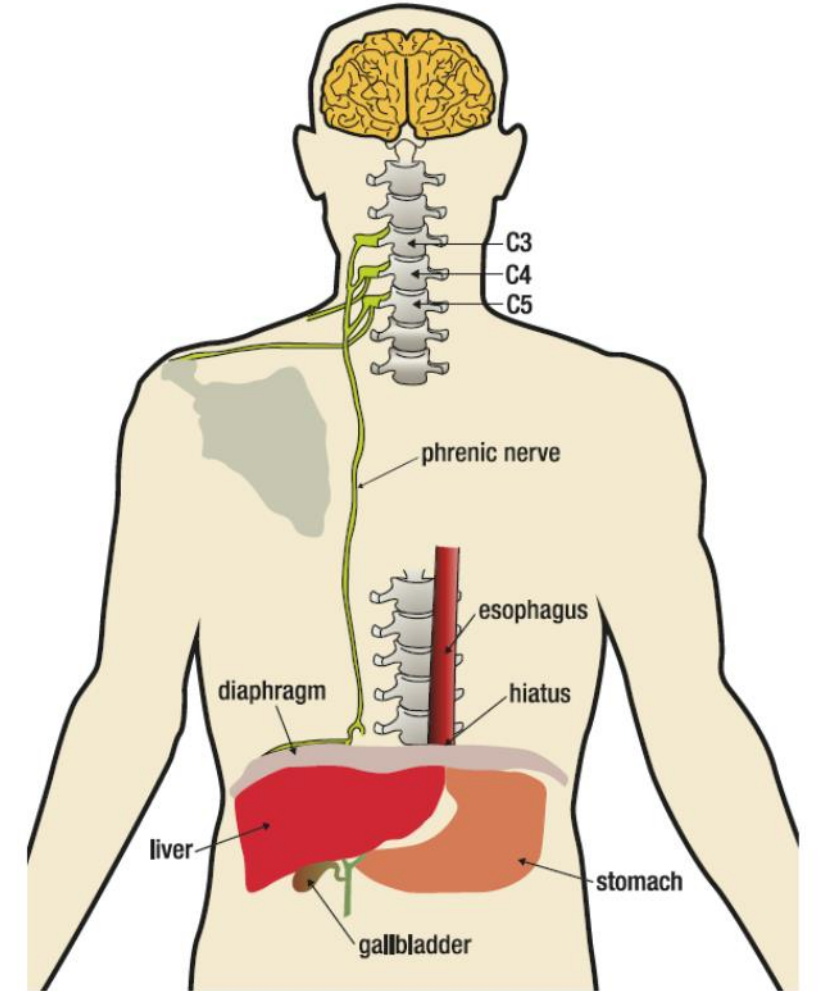


FIGURE 3. Nerve innervation to the diaphragm and neck

Sandifer sendromu

- Neden tüm hastalarda olmuyor
- Ya da uykuda olmuyor



Frankel EA, Shalaby TM, Orenstein SR. Sandifer syndrome posturing: relation to abdominal wall contractions, gastroesophageal reflux, and fundoplication. *Dig Dis Sci.* 2006;51(4):635-640.

Gordon N. Sandifer's syndrome: investigations and treatment. *J Pediatr Neurol.* 2007;5:275-278.

- Sandifer sendromu, GÖRH'nin başarılı tedavisi ile tam veya tama yakın düzelir.



Atipik/Ekstraözefageal Belirtiler

Sandifer
Sendromu

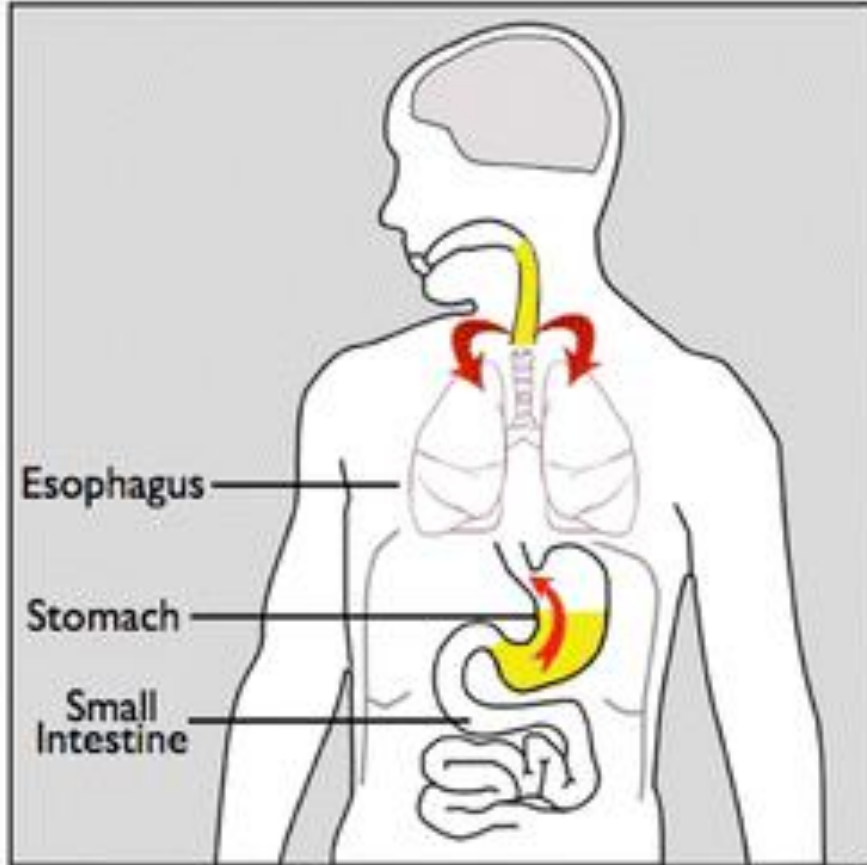
Otolarengolojik belirtiler

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Solunum sistemi ile ilgili olanlar

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- Tekrarlayan pnömoni
- Aspirasyon pnömonisi (özellikle rekürren veya kronik)
- Astım

Atipik/Ekstraözefageal Belirtiler Reflü Teorisi



Üst hava yollarına ulaşan reflü materyali, mukozal irritasyon ile siliyer epitelde hasara neden olarak siliyer disfonksiyona neden olur.

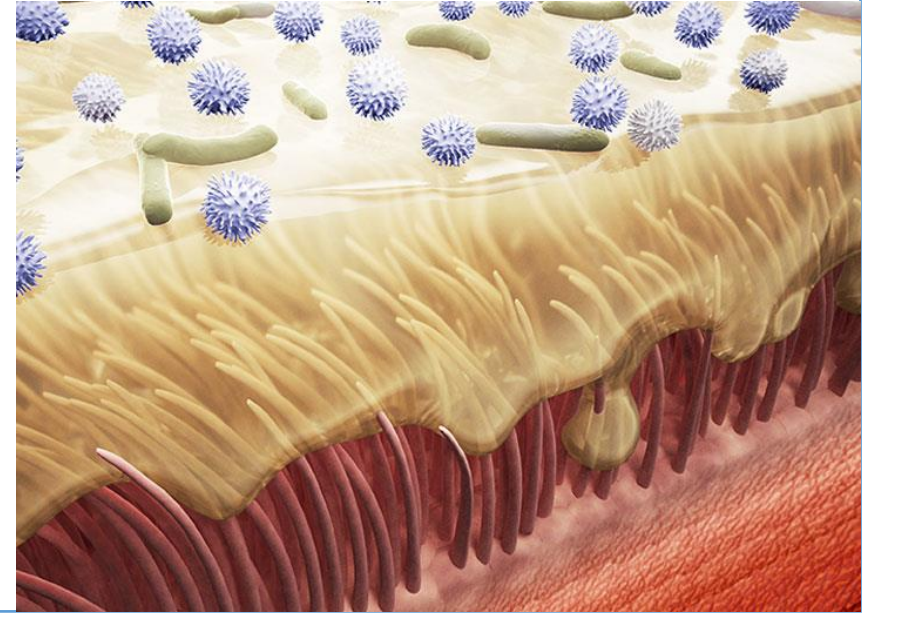
Pepsinin etkisi ile mukustaki bikarbonat ve musin düzeyi azalır, koyu yapışkan bir mukusa neden olur.

- Mukus birikimi

- Post nazal akıntı
- Boğaz temizleme
- Kronik öksürük

- Mukosiliyer disfonksiyon,

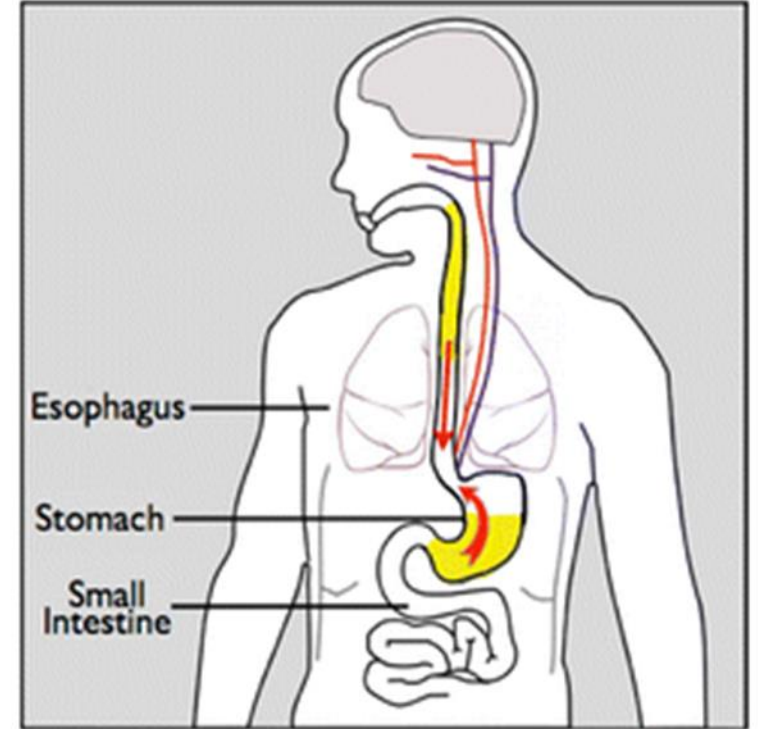
- Solunum yolu enfeksiyona yatkınlık oluşturur



Özofagus ve bronşial ağaç arasındaki ortak embriyonik kökenden dolayı Distal özofagusa gelen reflü materyali vagal aracılı refleks nedeniyle solunum yollarında bronkospazma ve dirence neden olur.

Reflex Theory

- Reflux into distal esophagus stimulates vagally-mediated reflex
- Common embryonic origins between esophagus and bronchial tree



GÖRH- Solunum Yolu Hastalıkları İlişkisi

Vaka- Kontrol çalışmasında

(2-18 yaş arası)

1980 GÖRH hastası

7920 GÖRH olmayan hasta

Sinüzit %4,2 vs %1,4 (OR:2,3)

Larenjit %0,7 vs %0,2 (OR: 2,6)

Astım %13,2 vs %6,8 (OR: 1,9)

Pnömoni %6,3 vs %2,3 (OR: 2.3)

Extraesophageal Associations of Gastroesophageal Reflux Disease in Children Without Neurologic Defects

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Background & Aims: The potential association between gastroesophageal reflux disease (GERD) and extraesophageal manifestations remains unknown in children without neurological defects. We conducted a large case-control study to examine the association between GERD and several upper and lower respiratory disorders in these children. **Methods:** We identified all patients between 2 and 18 years of age with GERD who were seen at Texas Children's Hospital between 1996 and 2000. Patients seen during the same time period without GERD were randomly selected as controls (4:1 ratio). Patients with mental retardation, cerebral palsy, or congenital esophageal anomalies were excluded. We compared the presence of several predefined upper and lower respiratory disorders in cases and controls. **Results:** We identified 1980 patients with GERD and 7920 controls without GERD. Cases and controls were without neurological deficits or congenital esophageal anomalies. Cases were older than controls (9.2 years \pm 4.6 vs. 8.6 \pm 4.9, $P < 0.0001$), and were more likely to be female (51.2% vs. 47.2%, $P = 0.0028$) and white (60.2% vs. 41.2%, $P < 0.0001$). Compared with controls in univariate analyses, cases with GERD had more sinusitis (4.2% vs. 1.4%, $P < 0.0001$), laryngitis (0.7% vs. 0.2%), asthma (13.2% vs. 6.8%, $P < 0.0001$), pneumonia (6.3% vs. 2.3%, $P < 0.0001$), and bronchiectasis (1.0% vs. 0.1%, $P < 0.0001$). However, otitis media was less common in cases than controls (2.1% vs. 4.6%, $P < 0.0001$). After adjusting for differences in age, gender, and ethnicity in the regression analyses, GERD remained a significant risk factor for sinusitis (adjusted odds ratio [OR], 2.3; 95% confidence intervals [CI], 1.7-3.2; $P < 0.0001$), laryngitis (OR, 2.6; CI, 1.2-5.6; $P = 0.0228$), asthma (OR, 1.9; CI, 1.6-2.3; $P < 0.0001$), pneumonia (OR, 2.3; CI, 1.8-2.9; $P < 0.0001$), and bronchiectasis (OR, 2.3; CI, 1.1-4.6; $P = 0.0193$). **Conclusions:** GERD in children without neurological defects is associated with a several-fold increase in the risk of sinusitis, laryngitis, asthma, pneumonia, and bronchiectasis. Further studies are needed to examine whether a cause-effect relationship exists between GERD and these disorders in children.

Gastroesophageal reflux disease (GERD) is a common condition that affects an estimated 10% of the U.S. adult population.^{1,2} The manifestations of GERD range in severity from symptoms (e.g., heartburn, regurgitation) without gross damage to the esophagus to complicated GERD characterized by erosive esophagitis, esophageal strictures, and Barrett esophagus (BE).^{3,4} In addition, GERD in adults has been associated with several extraesophageal manifestations, including pharyngitis, laryngitis, asthma, pulmonary fibrosis, and pulmonary aspiration syndromes such as bronchiectasis, lung abscesses, and recurrent pneumonia.^{5,6}

Gastroesophageal reflux is often present in infants, although it is usually normal or "physiologic," spontaneously resolving by the second year of life.^{7,8} Gastroesophageal reflux occurring in children older than 1.5-2 years is considered pathologic, or GERD.^{9,10} Severe GERD during childhood has a few well-known risk factors: (1) neurologic disorders, such as spastic quadriplegia or cerebral palsy^{11,12}; and (2) congenital malformation, such as esophageal atresia and tracheoesophageal fistula.^{13,14} However, most children with GERD do not have these risk factors.

The clinical significance of the extraesophageal manifestations of GERD in children without neurologic defects remains unclear. Several investigators have estimated the prevalence of GERD in patients with sinusitis,¹⁵ laryngitis,^{16,17} or asthma.¹⁸⁻²² These studies have derived their estimates from relatively small samples of children seen at referral centers. Most of these studies did not contain control populations for comparison. Moreover, they mostly studied the prevalence of

Abbreviations used in this paper: BE, Barrett esophagus; 95% CI, 95% confidence interval; CPT, Current Physician's Terminology; GERD, gastroesophageal reflux disease; ICD-9 CM, International Classification of Disease, Clinical Modification, ninth edition; OR, odds ratio; TCH, Texas Children's Hospital.

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Systematic review: the extra-oesophageal symptoms of gastro-oesophageal reflux disease in children

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SUMMARY

Background

Extra-oesophageal symptoms are thought to be common, atypical symptoms of gastro-oesophageal reflux disease (GERD) in children.

Aim

To investigate the prevalence of GERD in children with extra-oesophageal symptoms or of extra-oesophageal symptoms in children with GERD, and the effect of GERD therapies on extra-oesophageal symptoms.

Methods

A systematic review of articles in PubMed and EMBASE.

Results

We identified 18 relevant articles. The pooled weighted average prevalence of GERD in asthmatic children was 23%, compared with 4% in healthy controls from the same five studies. The majority of studies evaluating the relationship between apparent life-threatening event (ALTE) and GERD did not suggest a causal relationship. Seven studies reported that respiratory symptoms, sinusitis and dental erosion were significantly more prevalent in children with GERD than in controls. Data from pharmacotherapeutic trials were inconclusive and provided no support for a causal relationship between GERD and extra-oesophageal symptoms.

Conclusions

Possible associations exist between GERD and asthma, pneumonia, bronchiectasis, ALTE, laryngotracheitis, sinusitis and dental erosion, but causality or temporal association were not established. Moreover, the paucity of studies, small sample sizes and varying disease definitions did not allow firm conclusions to be drawn. Most trials of GERD therapies showed no improvement in extra-oesophageal symptoms in children.

Table 1. Prevalence of extra-oesophageal symptoms in children with GERD

Symptom	Reference	Population size	Study design	Method of data collection	Definition of reflux symptoms	Definition of extra-oesophageal symptom	Prevalence of extra-oesophageal symptom in children with GERD	
Respiratory symptoms	El-Serag <i>et al.</i> ¹²	1980 with GERD + 7980 controls	Association case-controlled study	Database	Physician diagnosis	Physician diagnosis	13.2% vs. 6.8% of controls ($P < 0.0001$)	
							Pneumonia	6.3% vs. 2.3% of controls ($P < 0.0001$)
							Bronchiectasis	1% vs. 0.1% of controls ($P < 0.0001$)
	Tolia <i>et al.</i> ²⁰	173 with GERD + 169 controls	Association case-controlled study	Database	Physician diagnosis	Physician diagnosis	20% vs. 31% of controls ($P < 0.12$)	
	General respiratory symptoms						49% vs. 63% of controls ($P < 0.01$)	
General respiratory symptoms	Khalaf <i>et al.</i> ²⁵	42 with severe RI + 66 controls	Cross-sectional controlled study	Continuous recording of respiratory rate, heart rate, nasal air flow	RI > 6, presence of feeding problems and response to anti-reflux measures	Respiratory distress syndrome defined by clinical features and positive chest radiograph	62% vs. 36% of controls ($P = 0.02$)	
ENT symptoms	El-Serag <i>et al.</i> ¹²	1980 with GERD + 7980 controls	Association case-controlled study	Database	Physician diagnosis	Physician diagnosis	4.2% vs. 1.4% of controls ($P < 0.0001$)	
							Otitis media	2.1% vs. 4.6% of controls ($P < 0.0001$)
Dental symptoms	Linnett <i>et al.</i> ²⁸	52 with GERD + 52 healthy controls	Prospective controlled study	Dental examination/medical/dental records	Physician diagnosis	WHO criteria for caries	14% had erosion vs. 10% of controls ($P < 0.05$)	
	Ersin <i>et al.</i> ²⁷	38 with GERD + 42 healthy controls	Cross-sectional controlled study	Questionnaire/dental exam	Physician diagnosis	WHO criteria for caries Eccles & Jenkins index for erosion by GERD	76% had erosion vs. 10% of controls ($P < 0.0001$) 37% had severe erosion vs. 1% of controls ($P < 0.05$)	

ALTE, apparent life-threatening event; ENT, ear, nose and throat; GERD, gastro-oesophageal reflux disease; RI, reflux index (% of total time when pH < 4); WHO, World Health Organization.

Table 2. Prevalence of GERD in children with extra-oesophageal symptoms

Symptom	Reference	Population size	Study design	Method of data collection	Definition of extra-oesophageal symptoms	Diagnosis of reflux symptom	Prevalence of GERD in-patients with extra-oesophageal symptoms
Respiratory symptoms							
Asthma	Stordal <i>et al.</i> ¹⁴	872 asthmatics + 264 controls	Cross-sectional controlled study	Questionnaire	GINA classification ⁶⁶	GERD questionnaire ¹³	19.7% of asthmatics had a positive GERD symptom score vs. 8.5% of controls (odds ratio, 2.6, $P < 0.001$)
Asthma	Barakat <i>et al.</i> ¹⁶	75 asthmatics + 25 controls	Cross-sectional controlled study	Medical history/examination	Physician diagnosis	Endoscopy/ultrasound	GI symptoms in 65% of those with asthma vs. 16% of controls ($P < 0.001$)
Asthma	Chopra <i>et al.</i> ¹⁷	80 asthmatics + 10 controls	Cross-sectional controlled study	Medical examination	≥ 3 episodes of reversible bronchospasm that lessen after therapy	Presence of scintica tracer in oesophagus in more than two frames	39% of asthmatics demonstrated reflux on scintiscanning, vs. 0% of controls ($P < 0.05$)
Asthma	Hughes <i>et al.</i> ¹⁸	9 asthmatics + 7 controls	Cross-sectional controlled study	Medical examination	ATS criteria for reversible obstructive airway disease	Oesophageal pH monitoring; reflux defined as a decrease in pH to < 4 for at least 15 s	Gastro-oesophageal reflux occurred in 33% of asthmatics vs. 57% of controls. No significant difference between the two groups in number or duration of reflux episodes or % of time pH < 4

Reflü-Astım iliřkisi

- Reflü ve astım arasındaki iliřki iki yönlüdür.
- Reflü astımı tetikleyebilir
- Astım reflüye neden olabilir



Akciğer
Hiperinflasyonu /
Diafram aşağıya
kayması /
His açısının
anatomisi bozulur/
LES toraks içine
girer.

Hava akımı
obstrüksiyonuna bağlı
artan negatif
intratorasik basınç
LES'in istirahat
basıncını düşürür.

Astım
ilaçlarının neden
olduğu LES
gevşemesi

Öksürüğün
neden olduğu
pozitif karın
içi basıncı
reflüyü artırır.

Astım

Özofagusun
inflamasyonu sonucu kan
düzeyi yükselen Substans
P ve VIP gibi
nöropeptidler
Hava yolu ödemi, mukus
salgısı, vazodilatasyon ve
düz kas kasılmasına
neden olur
(Nörojenik teori)

Distal özofagus
reseptörlerinin
uyarılması,
vagal aracılı
bronkospazm ve
artmış hava yolu
duyarlılığı
(Refleks teorisi)

Mide içeriğinin
solunum yollarına
mikroaspirasyonu
(Aspirasyon
teorisi).

GÖRH

Gastroesophageal Reflux and Asthma in Children: A Systematic Review

- 20 çalışma 5706 hasta
- Astımlı çocuklarda GÖRH prevalansı (% 19,3-80) %22.8
- Çalışmalardan 5'i kontrollü idi. (1314 astımlı, 2434 astım olmayan)
- Astımlı hastalar %22'si GÖRH
- Astım olmayanların %4,8'inde GÖRH
- Odds oranı: 5.6 (95% CI:4.3– 6.9)

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KEY WORDS
gastroesophageal reflux, asthma, reflux, review

ABBREVIATIONS
GERD—gastroesophageal reflux disease
OR—odds ratio
CI—confidence interval
ATS—American Thoracic Society

This study was completed independent of financial support from any specific sponsor, and the authors are solely responsible for the study design, collection, analysis, and interpretation of the data, and the writing of the report.

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abstract

FREE

CONTEXT: The relationship between gastroesophageal reflux disease (GERD) and asthma in children has been investigated; however, the nature of the association (if any) between these 2 conditions is unclear.

OBJECTIVE: We performed a systematic review of the literature to examine the association between GERD and asthma in children.

METHODS: A search of the medical literature was conducted by using PubMed and Embase (1966 through December 2008). Full-length articles in English that described at least 20 subjects younger than 18 years were included if they reported the prevalence of GERD (symptoms, pH studies, endoscopy/histology) in individuals with asthma or the prevalence of asthma in individuals with GERD. We calculated pooled odds ratios from studies that examined control groups, and we pooled prevalence estimates from all studies.

RESULTS: A total of 20 articles that described 5706 patients fulfilled the inclusion and exclusion criteria. Seventeen studies used objective methods for documenting reflux (eg, pH probe, contrast imaging, impedance, esophagogastroduodenoscopy), 2 studies relied on symptom-based questionnaires, and 1 study used diagnostic codes. Most studies ($n = 19$) examined the prevalence of GERD in 3726 individuals with asthma and reported highly variable estimates (19.3%–80.0%) and a pooled average of 22.8% with GERD symptoms, 62.9% of 789 patients with abnormal esophageal pH, and 34.8% of 89 patients with esophagitis. Only 5 studies included controls and enrolled 1314 case-patients with asthma and 2434 controls without asthma. The average prevalence of GERD was 22.0% in asthma cases and 4.8% in controls (pooled odds ratio: 5.6 [95% confidence interval: 4.3–6.9]).

CONCLUSIONS: There is a possible association between GERD and asthma in pediatric patients seen with asthma in referral settings. However, because of methodologic limitations of existing studies, the paucity of population-based studies, and a lack of longitudinal studies, several aspects of this association are unclear. *Pediatrics* 2010;125:e925–e930

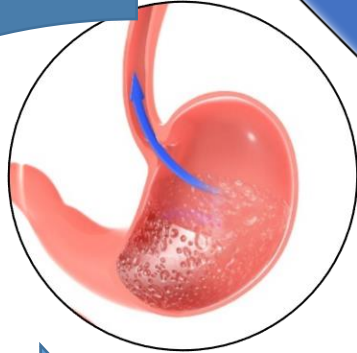
Reflü-Apne ilişkisi

Farenkse ve solunum yollarına gelen reflü nedeniyle refleks laringospazm

(Obstrüktif apne)

Özofageal gerilme, fareksteki reseptörlerin uyarılması vagal uyarı (Santral apne)

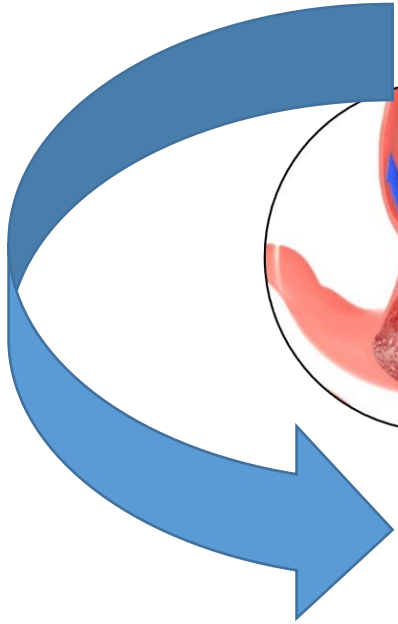
Larengeal mukozanın gıda ile teması sonucu solunum durur (Santral apne)



Apne sonrası oluşan hipoksi LES basıncını azaltır

Nefes alma çabası nedeniyle artan intraabdominal basınç

Apne sonrası oluşan öksürük



- Term ve pretermelerde, reflü apne ilişkisini inceleyen
- Ph metre ve MII-pH ile tanımlı GÖR hastalarını inceleyen 6 makaleyi değerlendiren bir sistemik derlemede (289 hasta)
- Bir çalışmada Reflü-apne ilişkilendirirken diğer 5'inde ilişki gösterilemedi.
- GÖRH ve apne ilişkisini göstermekte yeterli kanıt olmadığı sonucuna vardı.

REVIEW ARTICLE

Association between gastroesophageal reflux and pathologic apneas in infants: a systematic review

MARIJE J. SMITS,* MICHEL P. VAN WIJK,* MIRANDA W. LANGENDAM,† MARC A. BENNINGA* & MERIT M. TABBERS*

*Department of Pediatric Gastroenterology and Nutrition, Emma Children's Hospital, Academic Medical Center, Amsterdam, The Netherlands

†Dutch Cochrane Centre, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands

Key Messages

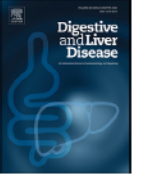
- There is insufficient evidence for an association between gastro esophageal reflux (GER) and apneas in infants. High quality studies using uniform inclusion criteria, definitions according to accepted guidelines, and patient relevant outcome measures are needed.
- The purpose of this systematic review was to determine whether an association between GER and apneas in infants exists.
- PubMed, EMBASE, and Cochrane databases were searched for studies assessing the relationship between GER and apneas in infants by means of simultaneous monitoring of GER and apneas.
- One of six included studies found an increase of apneic events after GER, the remaining 5 studies did not find an association. Two studies assessed apnea followed by GER as well, but did not find sufficient evidence for an association.

- Pretermelerde
- GÖRH (MII-Ph ile değerlendirilen)-Apne ilişkisi
- ve yedi çalışmayı (n=249) içeren bir sistematik derlemede
- 3 çalışmada (n=87) GÖR-Apne ilişkisi gösterildi.
- 4 çalışmada ilişki saptanmadı.
- İlişki saptanan 3 çalışmada ise total apne'lerin %8,3-%20'si GÖR ilişkili bulundu.



Contents lists available at ScienceDirect

Digestive and Liver Disease

journal homepage: www.elsevier.com/locate/dld

Review Article

Apnea in preterm neonates: what's the role of gastroesophageal reflux? A systematic review ☆☆☆

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Apnea of prematurity

Gastroesophageal reflux

Preterm neonates

ABSTRACT

A causal relationship between gastro-esophageal reflux (GER) and apnea in preterm infants has been frequently hypothesized and is currently debated. The present study aims at reviewing the currently available scientific evidence, in order to clarify the role of GER on the occurrence of apnea and to help improving the clinical management of apneic preterm neonates. We performed a systematic literature search to identify all the clinical studies on preterm neonates that properly assessed the relationship between apnea and GER. Two-hundred and fifty-two papers, including 32 reviews and meta-analysis, were screened. Out of them, only 7 were included in the final analysis according to the selected criteria. Among them, 3 studies reported an increased frequency of apnea after reflux compared to reflux-free period and 4 denied a significant temporal relation. In conclusion, a minority of apneic events occurs soon after GER episodes. Whether this happens by chance or because of a causal relationship is still impossible to define. Based on the available data, empirical treatment with acid inhibitors is not recommended in neonates with apnea unless a proven temporal relation is shown by simultaneous esophageal pH-impedance and polysomnography or cardiorespiratory monitoring and in the absence of a clear clinical benefit.

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- Bu sonuçlar, GÖRH-Apne arasındaki nedensel ve zamansal bir ilişkiyi göstermekte yeterli olmadığı sonucuna varıldı.
- Ancak ciddi şüphe olan hastalarda MII-pH ve polisomnografi veya kardiyorespiratuar monitorizasyon birlikte yapılarak ilişki gösterilebilir.
- Apnesi olan pretermlerde NEC ve sepsis riskini artırdığı için gereksiz antiasit tedaviden kaçınılmalı gerektiği vurgulanmış.

GÖRH' nin sistemlere göre belirti ve bulguları (Okul çocuđu-Ergenlerde)

Genel Belirti ve Bulgular

- Huzursuzluk,
- Aşırı ağlama
- Uyku bozukluđu
- Beslenme reddi
- Kilo alamama/ kilo kaybı
- Demir eksikliđi anemisi

Sindirim sistemi ile ilgili olanlar (özofageal/tipik)

- Sık regürjitasyon/kusma
- Retrosternal yanma/ ağrı/ (nonkardiyak göğüs ağrısı)
- Epigastrik ağrı
- Geğirme
- Disfaji/odinofaji (özofajit veya striktüre bađlı)
- Globus farengus (boğazda takılma hissi)
- Yemek sonrası dolgunluk, erken doyma hissi
- Hematemez/melena

Atipik/Ekstraözofageal Belirti/Bulgular (Okul Çocuđu ve Ergenlerde)

Sandifer
Sendromu

Otolarengolojik belirtiler

- Larenjit
- Farenjit
- Sinüzit
- Otit
- Ses kısıklığı, boğuk ses
- Diş çürükleri- halitozis
- Vokal kord granulomları
- Subglottik stenoz

Solunum sistemi ile ilgili olanlar

- Hışıltı
- Stridor
- Kronik öksürük
- Siyanoz atakları/Apne atakları
- Ani bebek ölümü sendromu
- Hayati tehdit edici olay (ALTE)
- Tekrarlayan pnömoni
- Aspirasyon pnömonisi (özellikle rekürren veya kronik)
- Astım

Reflü ilişkili göğüs ağrısının özellikleri

- Yemek sonrası oluşması
- Uykudan uyandırması
- Substernal bölgede, sıkma veya yanma tarzında
- Bazen sırta yayılabilir
- Dakikalar ila saatler sürer
- Kendiliğinden veya antasitler ile çözülür
- Emosyonel stress ile şikayetler artar



Disfaji ve odinofaji

- Disfaji (zor yutma), odinofaji (ağrılı yutma) reflü ile sıklıkla ilişkilendirilse de bu ilişkiyi gösteren pediatrik veri yoktur.
- Disfaji ve odinofaji, GÖRH'de peptik özofajitin bir semptomu olabilir.
- Sıklıkla diğer özofajitlere bağlı olarak görülür (EoO gibi)

Kronik öksürük

- Reflü ilişkili öksürük reflü içeriğinin direkt trakeobronşial ağacı irrite etmesi veya özofagobronşial nöronal öksürük refleksi uyarılması nedeniyle oluşur.
- Öksürük sırasındaki batın ve toraks arasındaki basınç gradient değişimleri öksürük ve reflü döngüsüne neden olur.
- Ancak reflü ilişkili öksürük tanısını koymak zordur çünkü bu hastaların çoğu tipik reflü semptomları göstermez.



Borelli ve ark.
Kronik öksürüğü olan
45 çocuğu (median age 7.8 years, range
1–16) MII-pH monitorizasyonu ile
araştırdılar.

24'ünde (%53,3) GÖR ilişkili öksürük
saptadılar.

%34'ü non-asit Reflü

19'unda (%42) tipik semptomlar Ø

Çocuklarda açıklanamayan kronik
öksürüklerde asit ve non-asit reflüler olası
bir etiyolojik faktördür diye yorumlandı.

Role of Gastroesophageal Reflux in Children With Unexplained Chronic Cough

*Osvaldo Borrelli, †Caterina Marabotto, †Valentina Mancini, †Marina Aloï, †Francesco Macrì,
†Paola Falconieri, *Keith J. Lindley, and †Salvatore Cucchiara

ABSTRACT

Objective: The relation between respiratory symptoms and gastroesophageal reflux (GER) is a matter of contention and debate, with limited data in children to substantiate or refute cause and effect. Moreover, there are few data on the relation between nonacid reflux and chronic cough in childhood. We aimed to describe the type and physical characteristics of reflux episodes in children with unexplained chronic cough.

Patients and Methods: Forty-five children with chronic cough underwent 24-hour multichannel intraluminal impedance-pH monitoring (MII-pH monitoring). Symptom association probability (SAP) characterized the reflux-cough association. Twenty children with erosive reflux disease (ERD) served as controls.

Results: Twenty-four children had cough-related reflux (CRR), with 19 having no gastrointestinal symptoms. Twenty-one had cough-unrelated reflux (CUR). CRR and ERD had increased acid (AR), weakly acidic (WAc), and weakly alkaline (WAlk) reflux. Esophageal acid exposure time and acid clearance time were higher in ERD than in CRR and CUR. In the CRR group, of 158 cough episodes related to reflux episodes, 66% involved AR, 18% WAc, and 16% WAlk. Seventeen children had positive SAP, 7 for AR, 5 for both AR and WAc, 4 for both WAc and WAlk, and 1 for WAlk.

Conclusions: In children with unexplained chronic cough, asymptomatic acid and nonacid GER is a potential etiologic factor. The increased acid exposure time and delayed acid clearance characteristic of ERD are absent in cough-related GER. MII-pH monitoring increases the likelihood of demonstrating a temporal association between the cough and all types of reflux.

Key Words: children, chronic cough, gastroesophageal reflux disease, multichannel intraluminal impedance test

(JPGN 2011;53: 287–292)

Chronic cough is a common and debilitating complaint in childhood, and represents one of the most common reasons for which parents seek medical care (1). Although the role of gastroesophageal reflux disease (GERD) in the pathogenesis of chronic cough in adults is widely accepted (2), in children there is less convincing evidence to support this relation (3,4).

GER may trigger cough through several mechanisms including the aspiration of acid gastric contents into the upper airways, vagally mediated cough upon the presence of acid in the esophageal lumen, and the sensitization of the central cough reflex (5). Recent studies have emphasized a role for nonacid reflux (AR) in the pathogenesis of atypical reflux symptoms (6,7). Although 24-hour pH monitoring is one of the current standard methods for GERD assessment in children (3), it fails to detect some types of reflux, especially when little or no acid is present in the refluxate. Multichannel intraluminal impedance and pH (MII-pH) monitoring combined can characterize the reflux episodes as acid or nonacid, as well as the height reached by the refluxate (8). Although data on the relation between non-AR and chronic cough have been published in adults (9,10), to our knowledge there are few published data regarding this issue in children (11).

In this prospective study we aimed to describe the type and physical characteristics of reflux episodes in a selected population of children with unexplained chronic cough and to compare the reflux pattern of the latter group with that found in children with erosive reflux disease (ERD).

PATIENTS AND METHODS

Patients

All of the children with unexplained chronic cough were considered eligible for the study. Unexplained chronic cough was

- Ivan Pavić ve ark
- Kronik öksürüğü olan 150 çocuğu (ort 7,5 yaş, range 0,3-18 yaş)
- MII-pH monitorizasyonu ile araştırdılar.
- %87.5'unda GÖR ilişkili öksürük saptadılar.
- %9 asit, %60 zayıf asit
- Öksürük özellikle zayıf asidik reflü ile ilişkili idi ve 2 yaşından küçük çocuklarda daha fazla ilişki saptandı.



Article

The Relationship Between Gastroesophageal Reflux and Chronic Unexplained Cough in Children

Ivan Pavić, MD, PhD¹, Jasna Čepin-Bogović, MD¹, and Iva Hojsak, MD, PhD¹

Abstract

The aim of this study was to assess the association between chronic cough and acid or weakly acid gastroesophageal reflux (GER) determined by 24-hour multichannel intraluminal impedance-pH monitoring and to assess whether the association is age dependent. Overall 150 children (mean age 7.5 years; range 0.3-18.0 years; male/female 90/60) were enrolled. Median of 87.5% (0% to 100%) of all cough episodes were associated with reflux; 9% (0% to 100%) with acidic and 60% (0% to 100%) with weakly acidic episodes. In 52 children (34.7%), all cough episodes were associated with GER (100% association). Children younger than 2 years had significantly higher number of cough episodes associated with total ($P = .03$) and weakly acidic GER ($P = .01$). Binary logistic regression confirmed that only increase in age decreases the risk for complete (100%) association between cough episode and GER. Cough is significantly associated with weakly acidic GER and children of younger age are at higher risk.

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International Journal of Pediatric Otorhinolaryngology

journal homepage: www.elsevier.com/locate/ijporl



Review Article

Dysphonia and reflux in children: A systematic review

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ARTICLE INFO

Keywords:

Laryngopharyngeal reflux
Gastroesophageal reflux
Voice disorders
Children
Pediatric

ABSTRACT

Objective: Aim of this review is to evaluate the relation between reflux (either laryngopharyngeal or gastroesophageal) and dysphonia in children.

Data sources: PubMed, Scopus, Embase.

Review methods: A literature search was conducted over a period from January 1990 to March 2020. The following search words were used either individually or in combination: voice disorders, laryngopharyngeal reflux, and gastroesophageal reflux. The search was conducted over a period of a month: April 2020.

Results: Five clinical research were selected based on our objectives and selection criteria. Four studies were of level III evidence. Altogether, a total of 606 patients were pooled with male predominance of 63%. In all studies, reflux was suggested to have strong relation with dysphonia. Majority of cases used 24-h pH monitoring to confirm reflux which yielded positive results in 69%. The top three most common endoscopic findings include: interarytenoid erythema and edema (32/38), vocal cord erythema and edema (160/231) and postglottic edema (141/337). Vocal cord nodules were found in 28% of our patients. Acoustic analysis and perceptual assessment of voice was performed in only 1 study. No complication from any procedure was mentioned in any of the studies. Outcome of treatment was mentioned in 1 study, whereby after 4.5 months of follow-up, 68% of children showed improvement in symptoms.

Conclusion: Current evidence shows that there is strong relation between reflux and dysphonia in children. Most common laryngoscopic findings suggestive of reflux includes interarytenoid erythema and edema, vocal cord erythema and edema and postglottic edema.



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Review Article

Reflux and dental disorders in the pediatric population: A systematic review



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 Maria Rosaria Barillari^{a,g}, Marilena Trozzi^{a,h}, Duino Meucci^{a,h}, Shazia Peer^{a,i},
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ARTICLE INFO

Keywords:

Reflux
 Laryngopharyngeal
 Children
 Pediatric
 Gastroesophageal
 Dental
 Caries

ABSTRACT

Objectives: To investigate the role of laryngopharyngeal reflux (LPR) or gastroesophageal reflux disease (GERD) in the development of dental disorders in pediatric population.

Methods: PubMed, Scopus Cochrane database were assessed for subject headings using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) recommendations. Relevant studies published between January 1990 and January 2020 describing the association between reflux and dental disorders in children were retrieved. Three authors reviewed the LPR diagnosis method; inclusion criteria and outcomes. The bias analysis was performed through the tools of the Oxford Centre for Evidence-Based Medicine evidence levels.

Results: The electronic search identified 126 publications, of which 11 clinical studies and 2 basic science researches met our inclusion criteria. There is an important heterogeneity between studies about diagnostic method and clinical outcome evaluation. All studies based the reflux diagnosis on GERD criteria. No author considered hypopharyngeal nonacid reflux episodes through hypopharyngeal-esophageal intraluminal multi-channel impedance pH monitoring (HEMII-pH). The results of studies support a higher prevalence of dental erosion in children with GERD compared with healthy individuals. Controversial findings were found about the potential association between reflux and caries, and the modification of both saliva composition and production in reflux children.

Conclusion: The association between reflux and dental disorder is still uncertain. Future studies considering pharyngeal acid and nonacid reflux episodes through HEMII-pH are needed to confirm this hypothesis. The pepsin detection in saliva would be an additional way for detecting LPR in children with dental disorders.

Komplikasyonlar

- GÖRH'na baęlı olarak
- Özofajit, hemoraji
- Peptik striktür
- Barrett özofagusu ve
- Çok nadiren adenokarsinom gelişebilir.

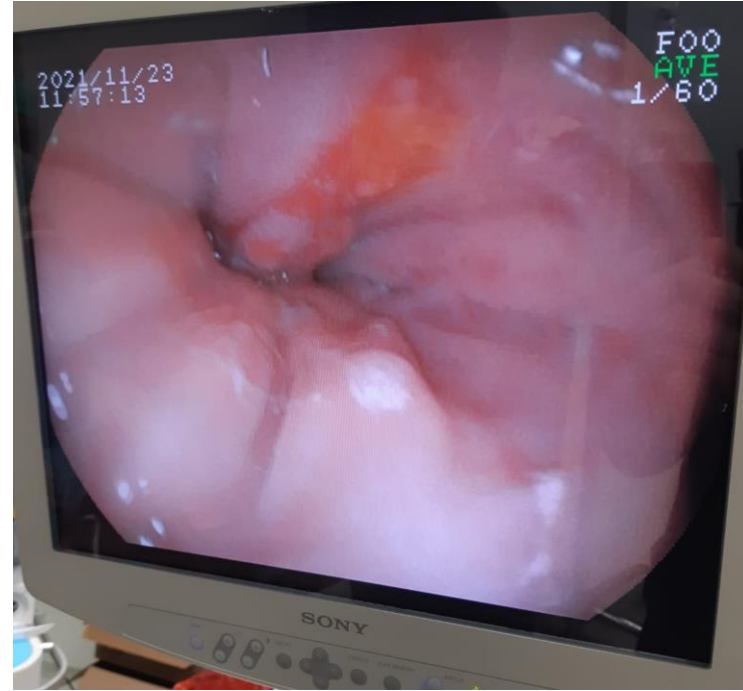
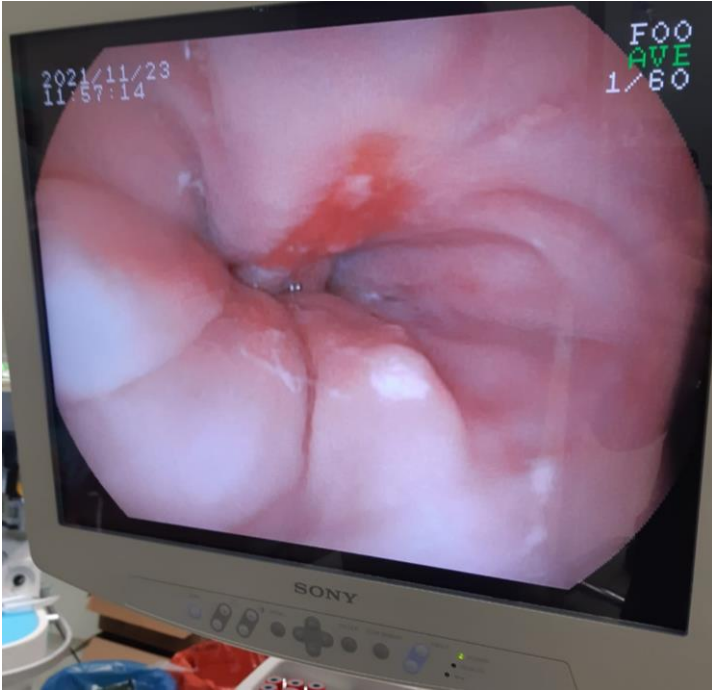


Eroziv Özofajit

- Asit ve pepsin'in özofagus mukozasında erozyon ve ülserlere neden olması nedeniyle oluşur.
- Hastalar
 - Asemptomatik
 - Retrosternal yanma
 - Regürjitasyon
 - Disfaji
 - Odinofaji
- Semptomlar ile özofajitin derecesi ve histopatoloji uyumlu değildir.

Eroziv Özofajit

- Endoskopide özofageal mukozada özofagogastrik bileşkenin hemen üzerinde mukozal yarılmalar, açılmalar şeklinde görülür.



- GÖRH olan çocuklarda eroziv özofajit, yetişkinlere göre daha az görülür
- 7188 GÖRH olan çocuğu içeren bir çalışmada eroziv özofajit sıklığı %12,4 olarak bulundu.
- Eroziv özofajit görülme sıklığının yaşla arttığı ve kızlarda daha sık görüldüğü saptandı.

Prevalence of Endoscopic Findings of Erosive Esophagitis in Children: A Population-based Study

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ABSTRACT

Purpose: Symptoms of gastroesophageal reflux disease (GERD) occur in 2% to 7% of children. The manifestations of GERD can be limited to symptoms (eg, heartburn, regurgitation) or can be more complicated, such as erosive esophagitis, esophageal strictures, or Barrett esophagus. The prevalence of such GERD complications in children is unknown. The purpose of this study was to determine the prevalence of endoscopic findings of erosive esophagitis in children.

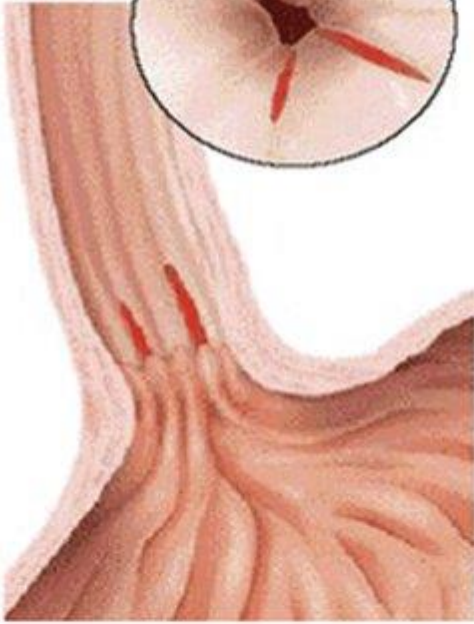
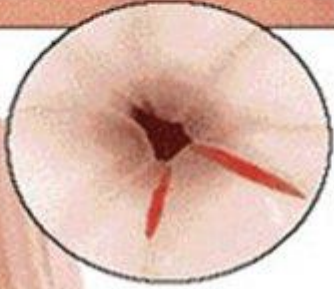
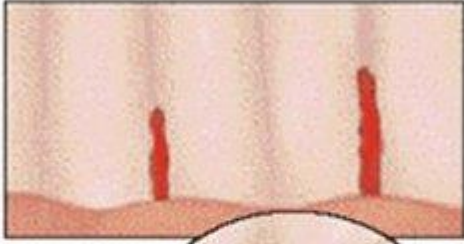
Patients and Methods: All children ages 0 to 17 years, 11 months who underwent upper endoscopy that was recorded in the Pediatric Endoscopic Database System-Clinical Outcomes Research Initiative between 1999 and 2002 were included. Endoscopic reports that were incomplete or that did not include demographic features, indications for endoscopy, or endoscopic findings were excluded. Erosive esophagitis was defined either descriptively or by the Los Angeles classification. Esophageal biopsy was not evaluated.

Results: A total of 7188 children who underwent upper endoscopy fulfilled the inclusion and exclusion criteria. Of those, 888 (12.4%) had erosive esophagitis. The median age of children with erosive esophagitis was 12.7 ± 4.9 years versus 10.0 ± 5.1 years in those without erosive esophagitis

($P \leq 0.0001$). Of those with erosive esophagitis, 55.2% (490/888) were male, compared with 48.2% (3040/6300) in those without erosive esophagitis ($P = 0.0001$). Erosive esophagitis was found in 29 of 531 (5.5%) children ages 0 to 1 years and progressively increased to 106 in 542 individuals (19.6%) by age 17. Hiatal hernia was found in 68 (7.7%) of children with erosive esophagitis, compared with 157 (2.5%) without erosive esophagitis ($P \leq 0.0001$). The prevalence of Barrett esophagus, esophageal stricture, ulcer, previous surgery, nodules, foreign body or retained food, and anatomic abnormalities was not significantly different between children with erosive esophagitis and those without. **Conclusions:** The frequency of erosive esophagitis is slightly higher in male children and increases with age. In contrast to erosive esophagitis in adults, there were no significant variations according to race or ethnicity. Hiatal hernia is the only endoscopic observation that predicts erosive esophagitis. *JPGN* 47:141–146, 2008. **Key Words:** Erosive esophagitis—Outcomes research—Pediatric endoscopy. © 2008 by European Society for Pediatric Gastroenterology, Hepatology, and Nutrition and North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition

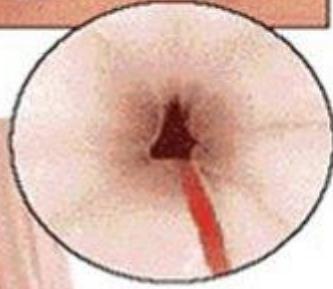
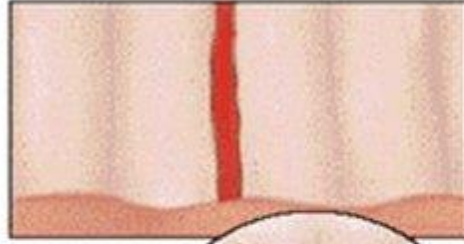
- Özofajitin ciddiyetini ve tedaviye yanıtı belirlemek için endoskopik sınıflandırmalar geliştirilmiştir (Hetzel-Dent sınıflaması ve Los Angeles sınıflaması gibi).
- Bu sınıflamalar, bazı pediatrik çalışmalarda kullanılmışsa da genellikle çocuklar için güvenilirliği net değildir.

GRADE A



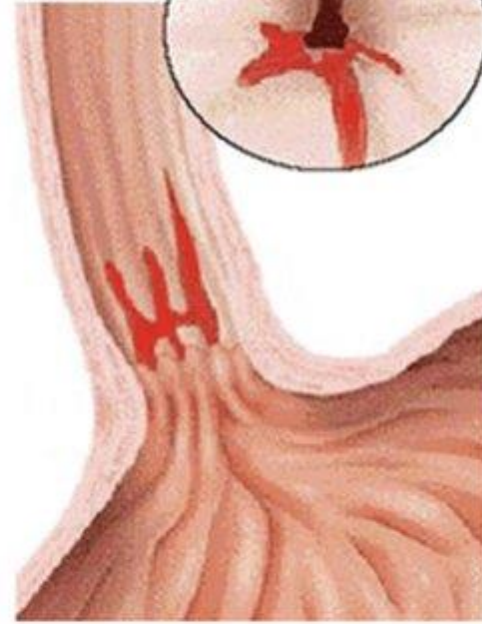
Mukoza katlantılar
üzerinde 1 veya daha
fazla ≤ 5 mm erozyon

GRADE B



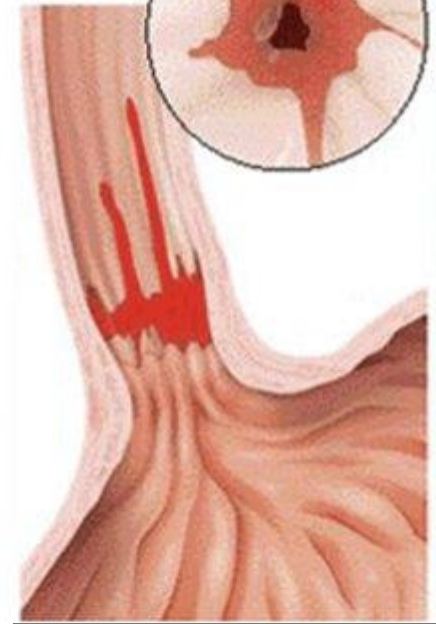
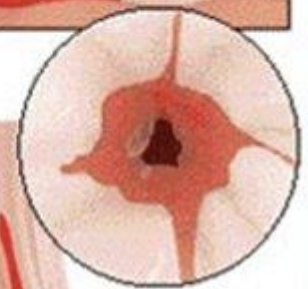
Mukoza kıvrımlarda
>5 mm hasar, ancak
kıvrımlar arası
devamlılık yok

GRADE C

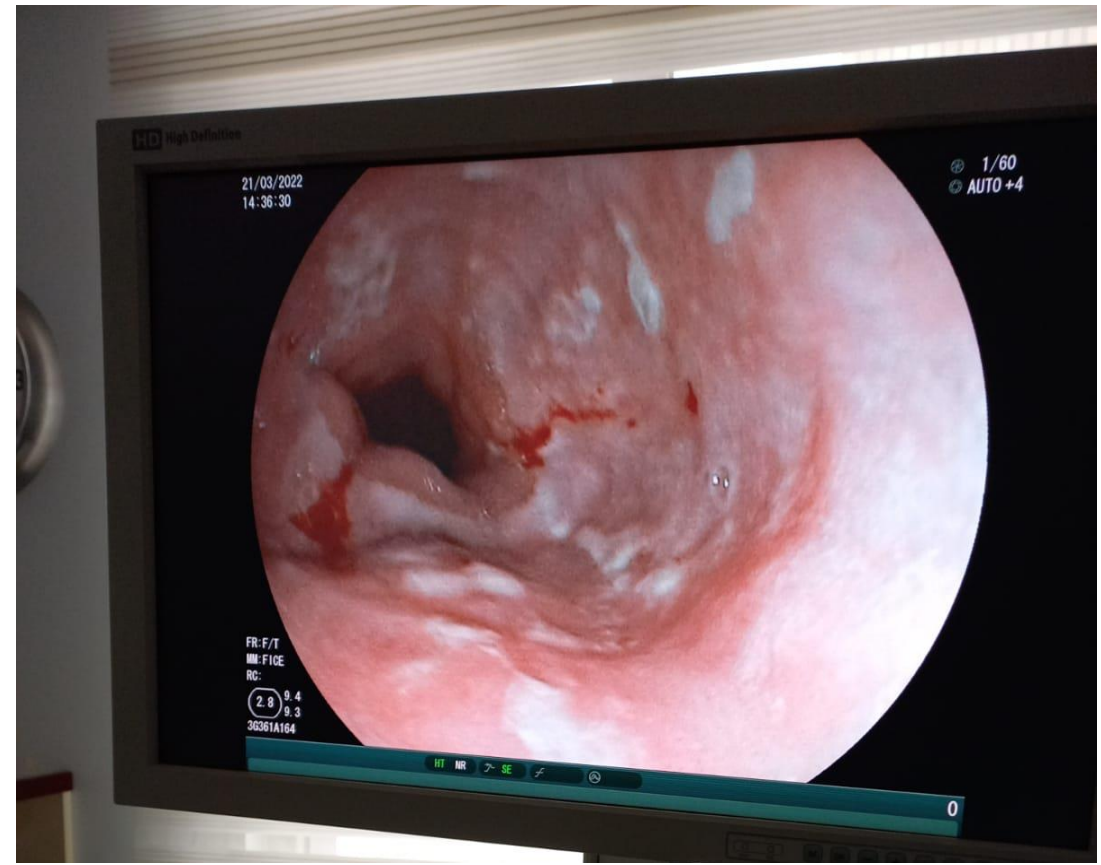
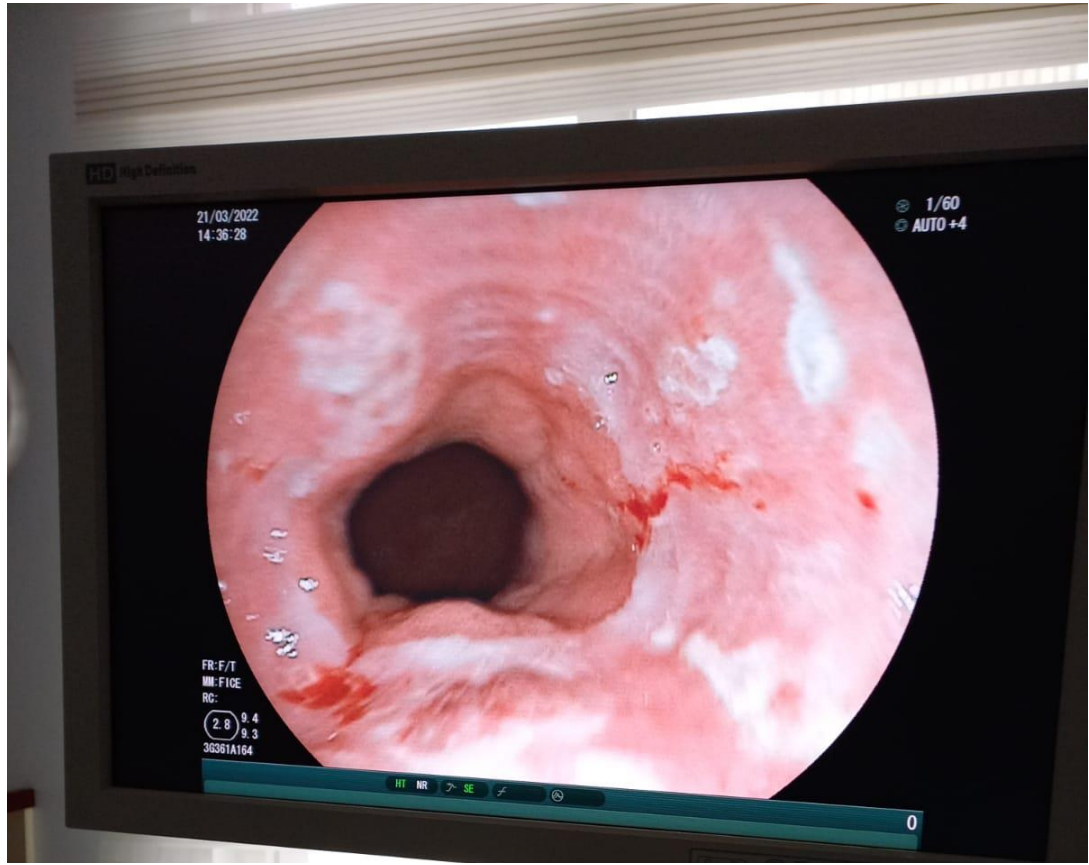


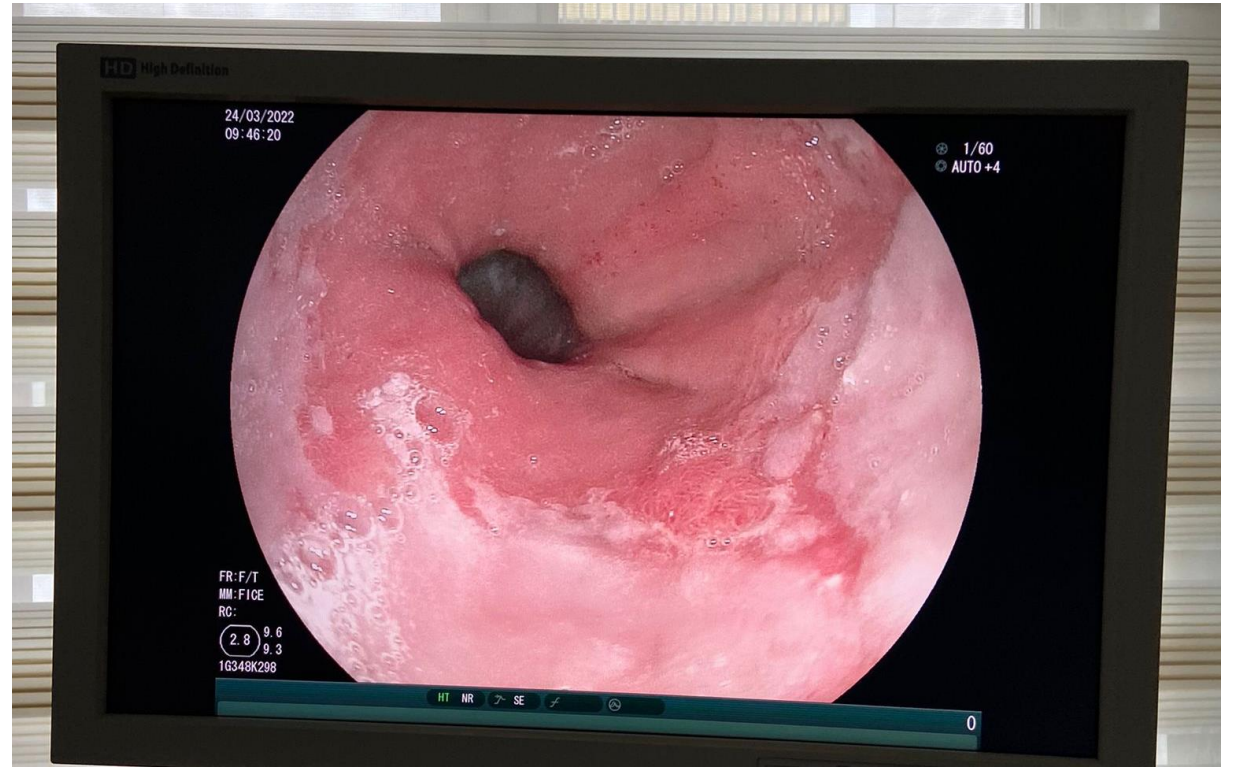
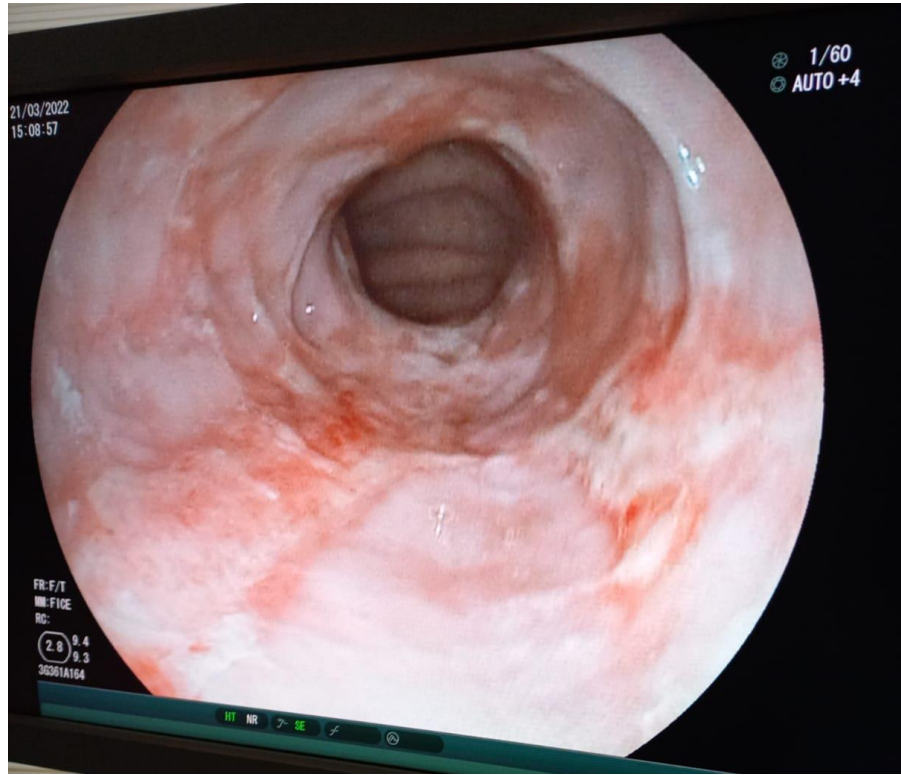
Mukoza hasar 2 veya daha
fazla sayıda mukoza
kıvrım arasında devamlı,
ancak çevre değil

GRADE D



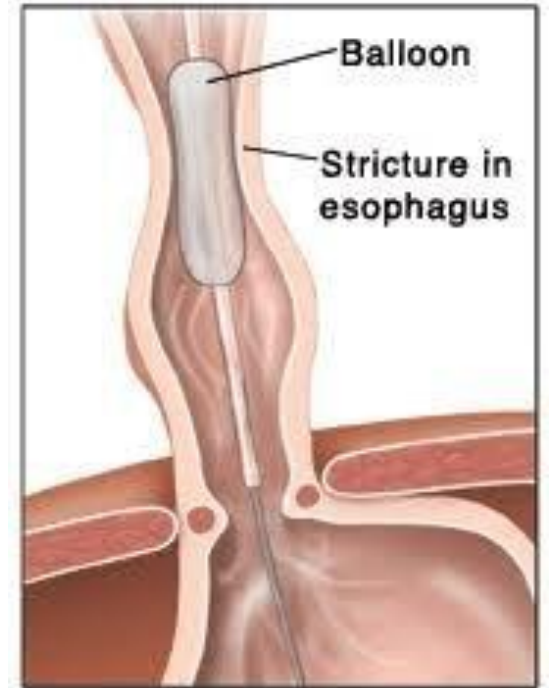
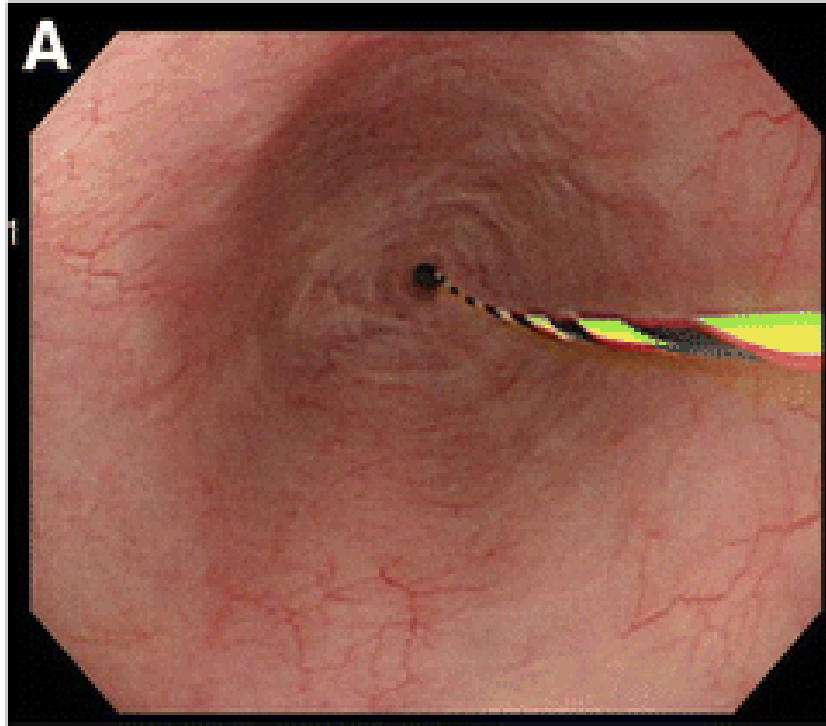
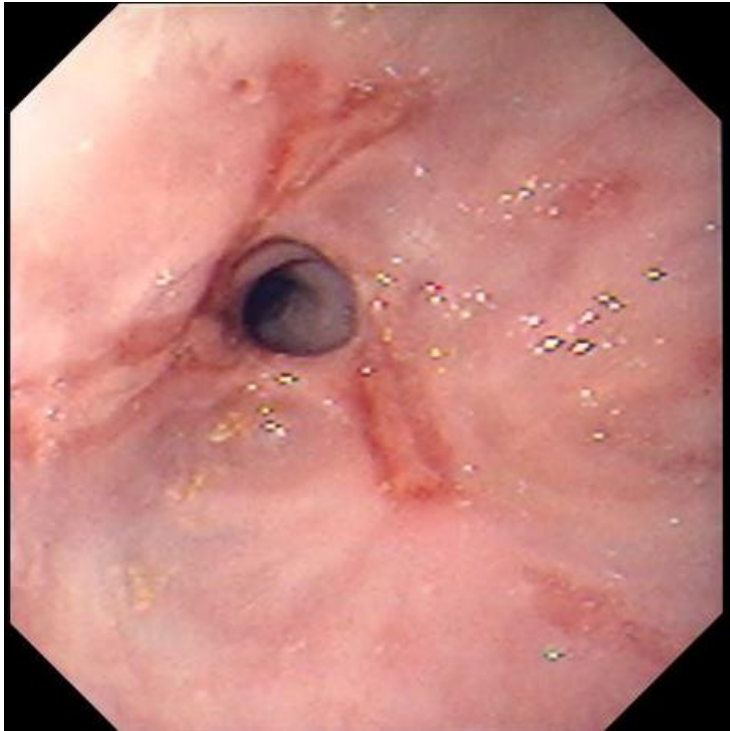
Özofagus lümeninin
%75'ten fazlasını
kapsayacak şekilde
birleşen lezyonlar





Özofageal striktür

- Kronik şiddetli GÖRH'nin komplikasyonu sonucu özofagus lümeninin anormal daralmasıdır.
- Eroziv Özofajitin iyileşme sürecinin bir sonucudur.
- İyileşen dokularda kollajen birikir ve zamanla kollajen lifleri kontrakte olarak özofagus lümenini daraltır.
- Yutma güçlüğü (disfaji), odinofaji, sık boğulma atakları ile kendini gösterir.
- Tedavisi dilatasyon ve rekürrensi önlemek için PPI ile tedaviyi gerektirir.



Barrett özofagusu

- Kronik şiddetli GÖRH'den dolayı, özofagusta skuamöz epitelin kolumnar epitele metaplazik dönüşümüdür.
- Tanısı için hem endoskopik hem de histolojik olarak tanımlanması gerekir.
- Premalign bir durum olup, % 6-10 oranında maligniteye dönüşme riski vardır.

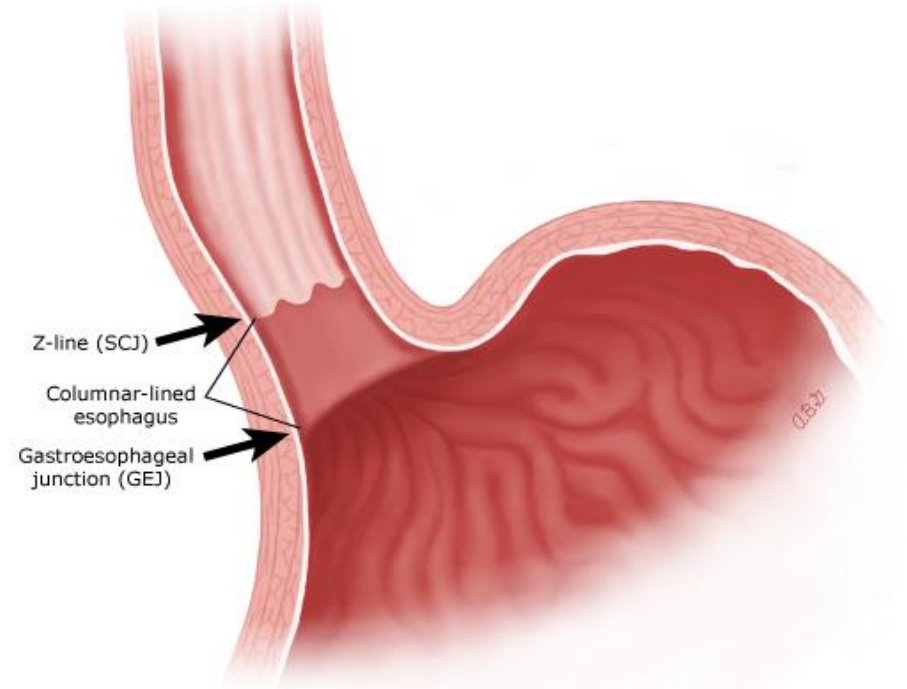
Barrett özofagusu

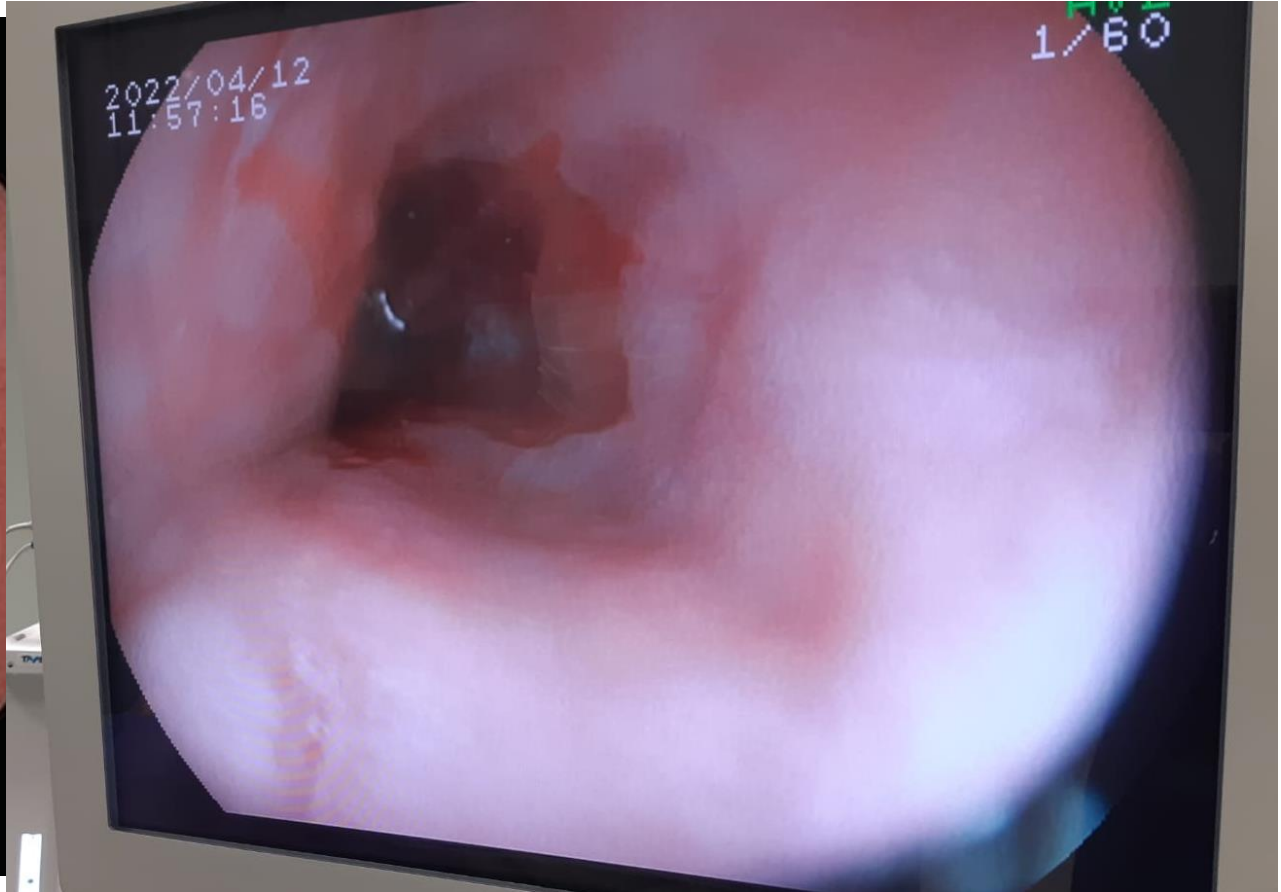
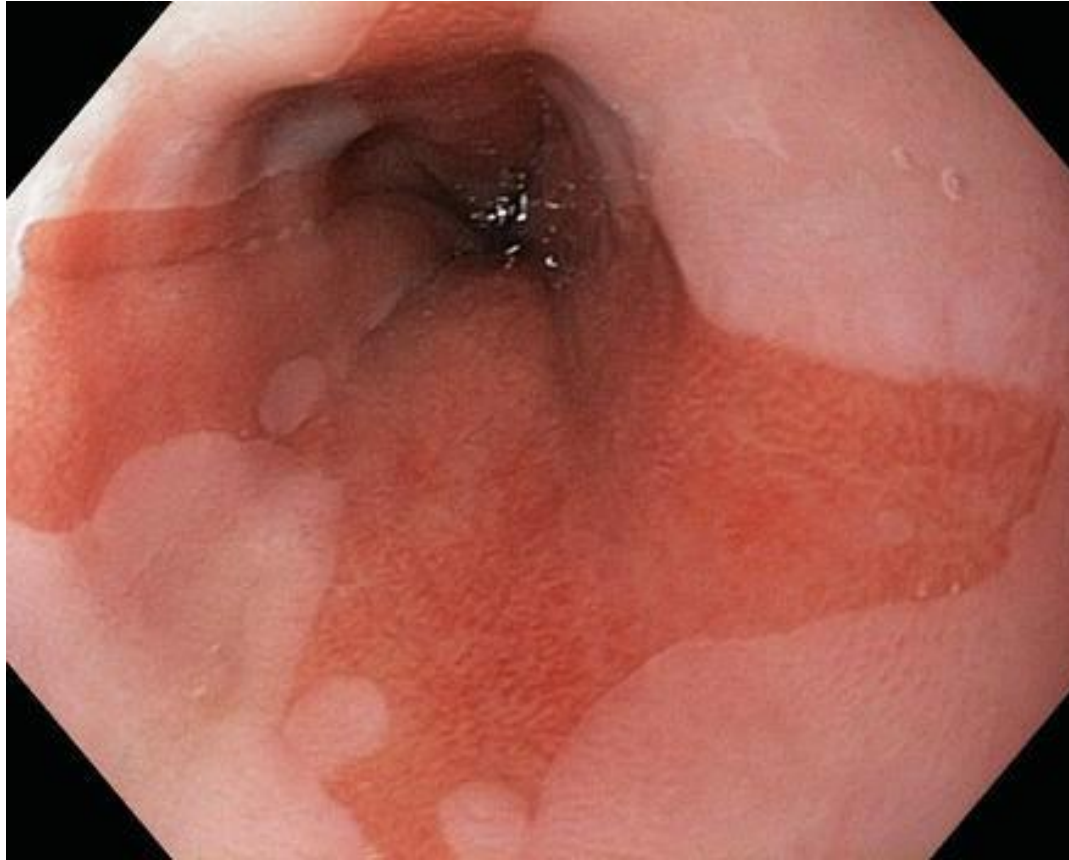
- GÖRH olan yetişkin hastalarda %6-12 oranında görülürken, çocuklarda bu oran düşük olup bir çalışmada GÖRH olan çocukların %0,3-4,8'inde saptanmıştır.
- Barrett's özofagusu, görülme sıklığı yaşla artmakta ve kız cinsiyette daha sık görülmektedir.

Skvamokolumnar bileşke gastroözofageal bileşkenin ≥ 1 cm proksimalindeyse şüphelenilmelidir.

Barret özofagusunda mukozada somon rengi görünüm karakteristiktir.

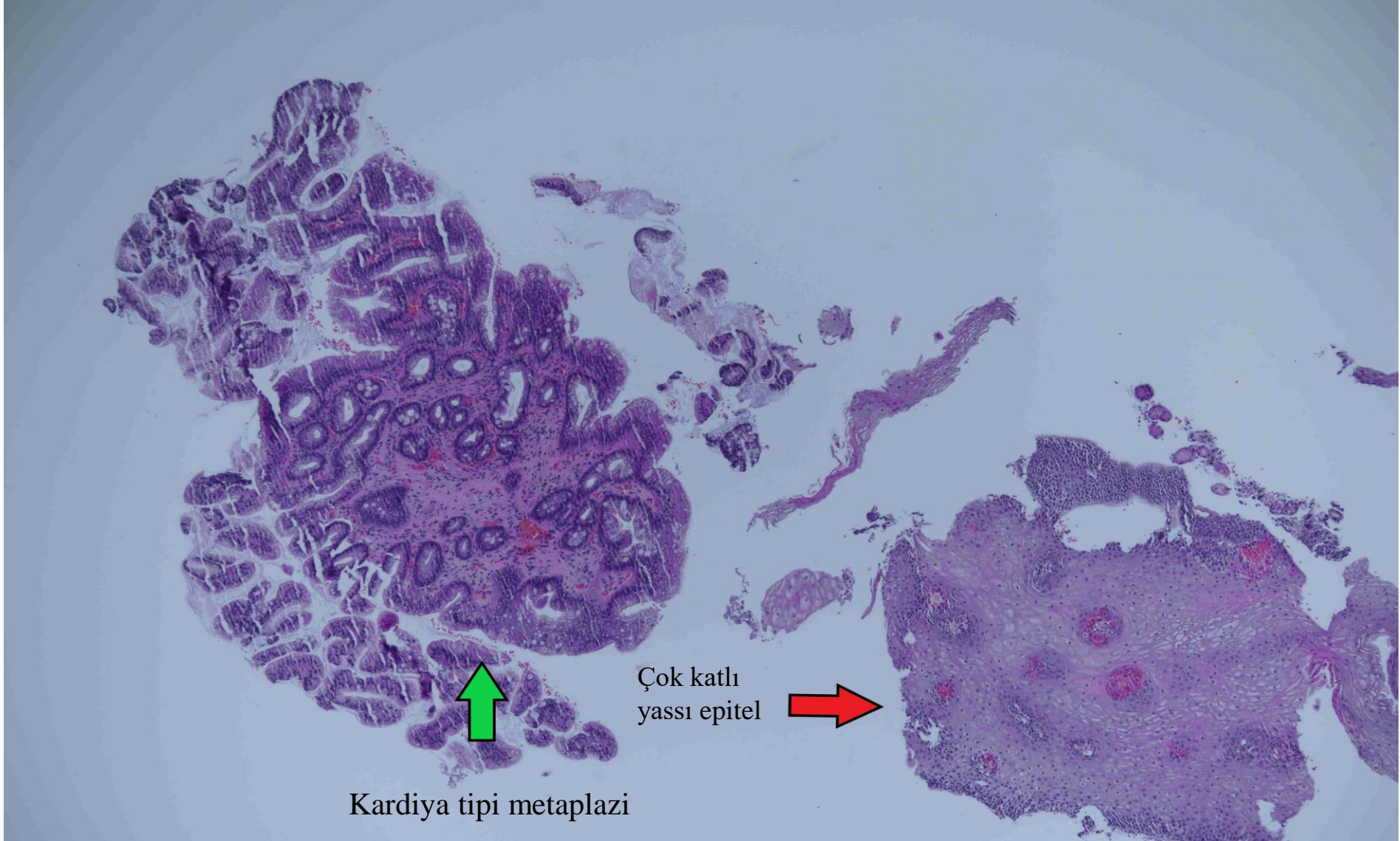
Anatomic landmarks for the diagnosis of Barrett's esophagus

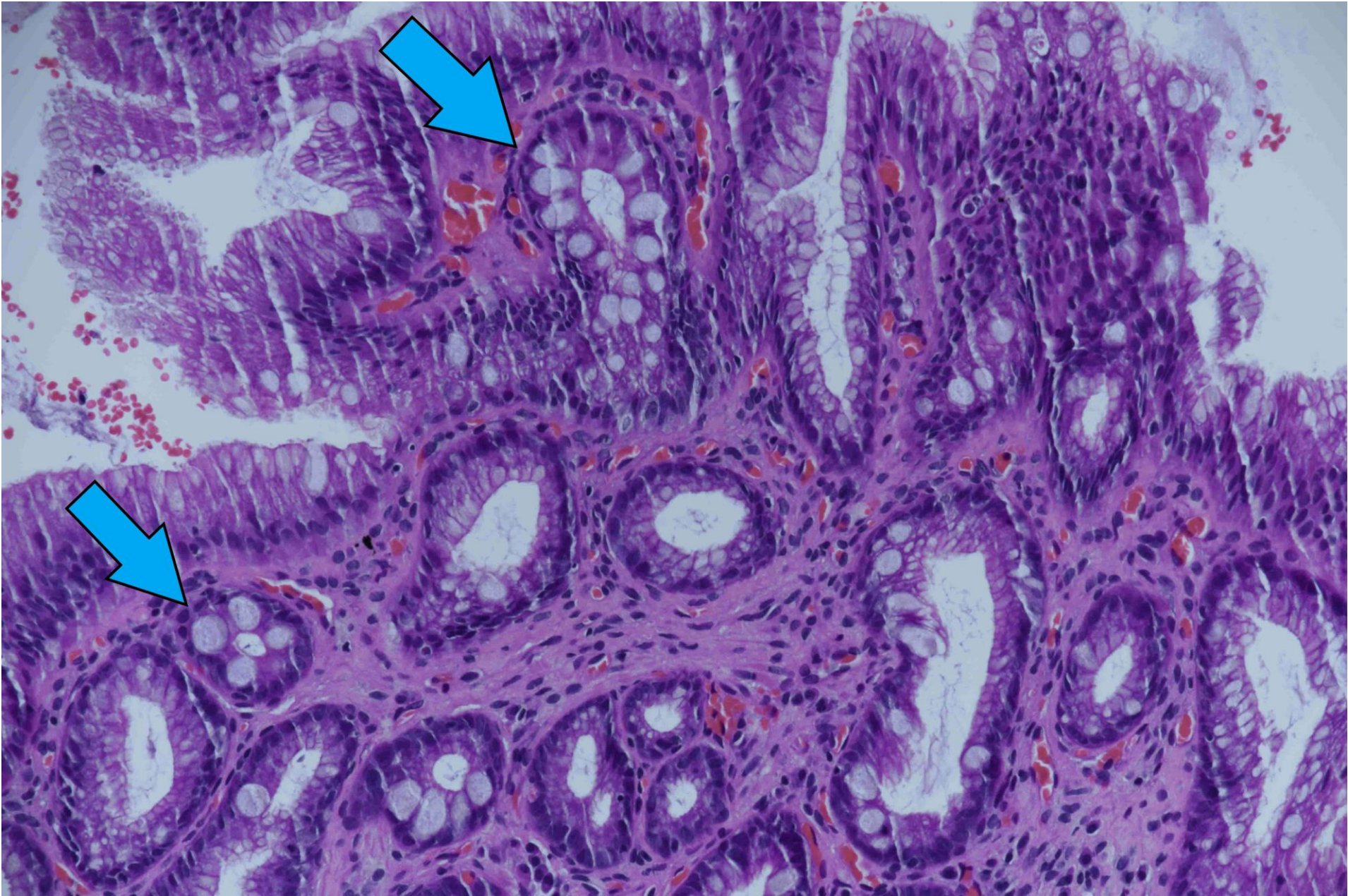




Biyopsi

- Barret özofagusu düşünölen alanlardan 1-2 cm aralıklarla en az 4 biyopsi alınmalıdır.
- Biyopsi örnekleri Z çizgisinden veya Z çizgisine <1 cm yakın alandan alınmamalıdır.
- Özofagogastrik bileşke kanama veya eksuda nedeniyle tam belirlenemiyorsa veya inflamasyon belirginse 12 hafta PPI tedavisi sonrası biyopsi yapılması önerilir.





Raicevic et al.
18 makale
130 Barret Özofaguslu hasta
(ort 10,6 (0,9-17,2 yaş))
Sadece 1 hastada 23 yaşında
adenokarsinom geliştiği
saptandı.

Barrett's esophagus in children: what is the evidence?

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Received: 24 January 2018 / Accepted: 13 June 2018
© Children's Hospital, Zhejiang University School of Medicine 2018

Abstract

Background This study systematically reviewed etiology, prevalence, treatment and outcome of Barrett's esophagus (BE) in the pediatric population.

Methods PubMed[®] was searched for terms "Barrett's esophagus" and "children". End points were age of patients, etiology, association with other syndromes, treatment, incidence of carcinoma and outcome. This review was conducted according to the PRISMA guidelines. Data were collected, entered and analyzed into a Microsoft Excel[®] spreadsheet database.


Results Search revealed 278 articles published between 1984 and 2017, of which 18 met the inclusion criteria. There were 130 patients for analysis with a mean age 10.6 years (0.8–17.2 years). BE was diagnosed in 80 patients with confirmed gastroesophageal reflux (GER) only; further 20 patients were neurologically impaired and had GER, 13 after esophageal atresia (EA) with or without tracheoesophageal fistula (TEF) repair with associated GER, 6 post-chemotherapy, 1 after post caustic burns, 1 after esophageal replacement with stomach, 1 after peptic esophageal stricture, 1 with secretory diarrhea, 1 with Fanconi anemia, 1 tetralogy of Fallot, and 5 healthy children. Regarding treatment, 26 were on medical treatment only, 16 had surgeries combined with medical treatment, 80 patients underwent surgery only, 1 was on diet management, 4 were on surveillance only and 2 were never treated for BE as death occurred because of associated conditions. Fundoplication was the most commonly performed surgery (82.2%). Adenocarcinoma was found in one 23-year-old patient. Mean follow-up was 3.45 years (10 months–13 years) and long-term outcome showed recurrences in 8 and esophago-mediastinal fistula and proximal esophagus ulcer in 1. There were 7 lethal outcomes which were not directly associated with BE.

Conclusions Although BE is considered a premalignant condition; incidence of carcinoma in pediatric population is low. Long-term follow-up with endoscopies and biopsies seems to be advisable for BE evidence and malignant alterations.

Keywords Barrett's esophagus · Children · Malignancy · Management · Outcomes



Esophageal Columnar Metaplasia in Childhood: A Population-Based Case Series Analysis

Leah Twohig-Bennett¹ · Helen G. Coleman¹ · Victoria Cairnduff¹ · Damian T. McManus² · Liam J. Murray¹ · Anna T. Gavin^{1,3} · Brian T. Johnston⁴ 

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Abstract

Background Adults with Barrett's esophagus (BE) are often entered into surveillance for esophageal adenocarcinoma (EAC), although cancer risk is relatively low. BE can be detected in children (< 16 years). Little is known about the epidemiology of pediatric BE, and it is unclear what the optimal surveillance regimes are in children.

Aim To evaluate the demographic and clinical characteristics, and future neoplastic progression risk in all pediatric BE patients diagnosed in Northern Ireland between 1993 and 2010.

Methods Data from the population-based Northern Ireland BE register were matched to the Northern Ireland Cancer Registry for EAC outcomes until end 2013. Age-adjusted incidence of pediatric BE was calculated, and characteristics between pediatric and adult BE patients compared using Chi-square tests.

Results Over 18 years, 42 pediatric BE patients (< 16 years) were identified, equivalent to an age-adjusted incidence of < 2 per 100,000 children. There was a clear age differential, with BE incidence increasing with age within the pediatric population. The majority (85.7%) of patients were male, a significantly higher male/female ratio than adult BE patients ($p < 0.001$). No pediatric BE patients progressed to high-grade dysplasia (HGD) or EAC, although the eldest patient was aged 34 years by the end of follow-up.

Conclusions This is the largest series of pediatric BE ever reported. It demonstrates that pediatric BE is rare. The male preponderance of this condition is more apparent in childhood compared with adult cases. No children developed HGD/EAC during follow-up, suggesting that regular surveillance is not required, at least until adulthood.

Keywords Barrett's esophagus · Epidemiology · Pediatrics · Childhood · Incidence

42 pediatrik Barrett özofaguslu hastanın hiçbirinde çocukluk döneminde yüksek grade displazi veya özofageal adenokarsinom gelişmedi.

- Sonuç olarak yenidođan ve süt çocuklarında
- Regürjitasyonun, GÖRH ile karıştırılmaması gereksiz tedavi uygulamalarını önleyecektir.
- Ayrıca atipik/ekstra-özofageal semptomların bilinmesi hastalığın erken dönemde tanınarak neden olacağı komplikasyonların takibi ve önlemesi açısından önemlidir.

**Dinlediđiniz iin
ok teŖekkr ederim.**

