Comparison of epidemiologic, physiologic & therapeutic characteristics of erosive esophagitis & nonerosive reflux disease (NERD) in relation to helicobacter pylori infection

An Essay

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Introduction

Gastroesophageal reflux disease is the process of reflux of stomach contents into the esophagus,the consequence is achemical insult from acid and enzymes.

This process does not cause major harm to the esophagus because the natural defence mecanisms present in the esophagus as natural peristalsis that clears the refluxate back to the stomach.

If these natural defence mecanisms are ineffective damage of the esophageal mucosa occurs and here gastroesophageal reflux disease can be said to be present.

Nonerosive reflux disease (NERD) and Erosive esophagitis are the main presentations of gastroesophageal reflux disease.

NERD is the most common presentation of GERD in community based patients.

Patients with NERD differ from patients with erosive esophagitis in epidemiologic, physiologic and therapeutic characteristics .

Epidemiologically: NERD differ from EE in sex distribution ,weight / body mass index and prevalence of hiatal hernia.

Physiologically: NERD patients tend to have normal lower esophageal sphincter resting pressure , minimal esophageal motility abnormalities ,low esophageal exposure to acid and minimal nighttime esophageal exposure to acid than EE patients.

Therapeutically: NERD patients have lower response rate to proton pump inhibitor once daily than EE patients.

The relation to helicobacter pylori infection to

gastroesophageal reflux disease development is contraversial.

GASTRO ESOPHAGEAL REFLUX DISEASE (GERD)

DEFINITION OF GERD

Gastroesophageal reflux disease (GERD) is a condition that develops when reflux of stomach contents causes troublesome symptoms and/or complications **(Vakil, et al.,2006). Fig (1)**

Traditionally, GERD is defined based on three major diagnostic parameters:

(1) Ambulatory 24-h esophageal pH monitoring .

(2) Upper gastrointestinal (GI) tract endoscopic examination for erosive esophagitis, the sensitivity of endoscopic examination is limited, as most patients with GERD do not have obvious mucosal injury.

(3) Clinical evaluation by physicians and clinical therapeutic treatment by acid suppression agents . **(Juan, et al.,2007)**

From a therapeutic perspective;

GERD is a disorder of both motility and oesophageal exposure to acid, in which the signs, symptoms, and clinical conditions that characterize GERD result primarily from recurrent reflux of gastric contents into the oesophagus. **(Malfertheiner and Hallerbck . 2005)**

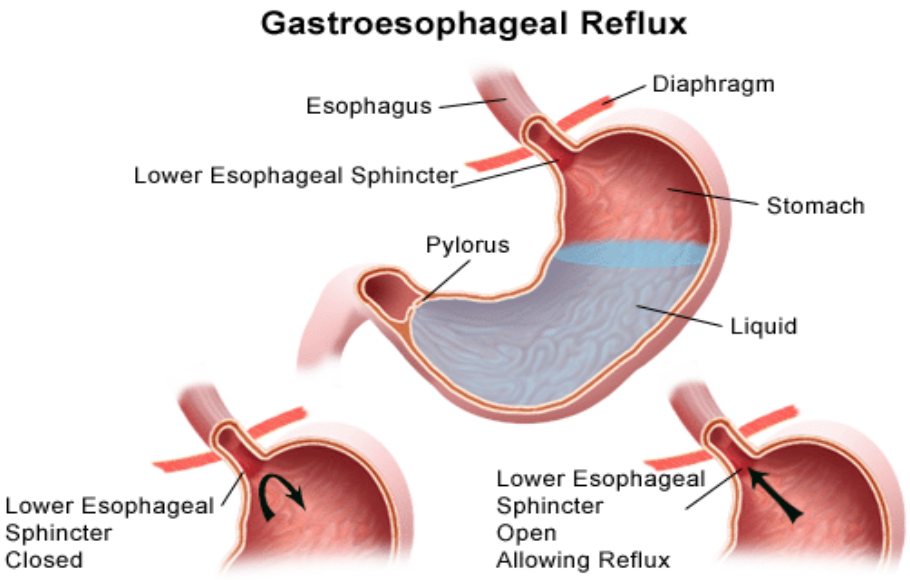
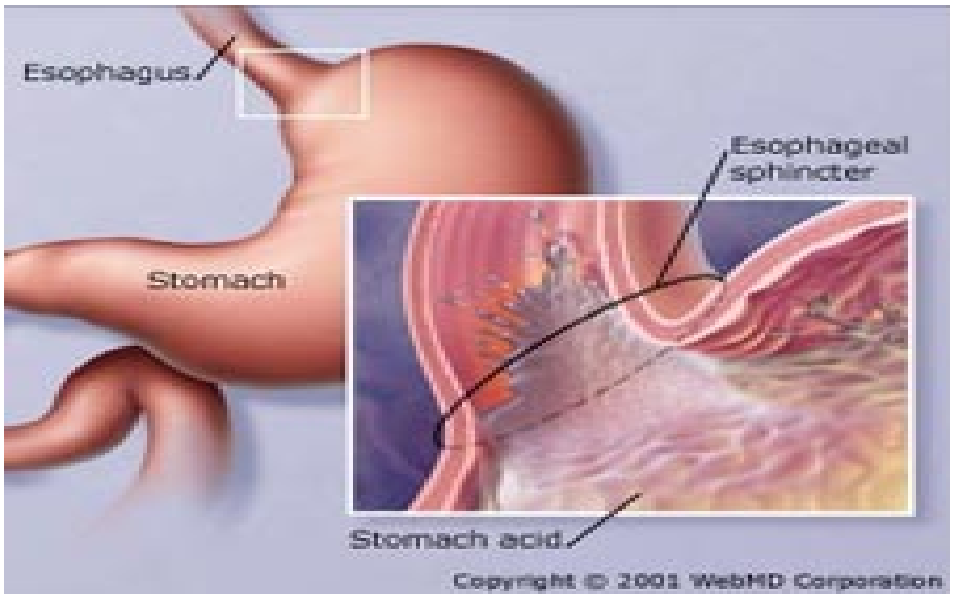


Figure (1).GERD



CLINICAL PICTURE of GERD

Classic GERD symptoms include heartburn and acid regurgitation; these symptoms are common during the day and may awaken subjects from sleep during the night. Nocturnal GERD symptoms affect quality of sleep and subsequent daytime function as acid reflux-related short arousals, for which the person is commonly amnestic lead to sleep fragmentation**. (Dickman , et al., 2007)**

1: Oesophageal manifestations

Gastro-oesophageal reflux disease (GERD), with its main symptoms of heartburn and regurgitation, is one of the most common conditions affecting the oesophagus **(Malfertheiner and Hal lerbck . 2005).**

-Regurgitation is defined as the perception of flow of the refluxed gastric content into the mouth or hypopharynx, patients typically regurgitate acidic material mixed with small amounts of undigested food. **(Vakil, et al.,2008)**

-Dysphagia is common in setting of long standing heartburn and ,in patients with erosive esophagitis **.(Dickman, et al., 2007)**

-Heartburn Approximately 24% of the population will experience heartburn daily or more often, whilst 43% experience heartburn as often as once or twice a week Moreover, patients can typically experience chronic heartburn for periods ranging from less than 1 year (15%) to more than

10 years (29%)**. (Shaker, et al., 2003)**

2: Extra-esophageal manifestations

cough, sleep-related disorders, laryngitis, chest pain that mimic angina pectoris, aspiration pneumonia, Laryngitis, pharyngitis and asthma were recognized to be associated with GERD**. (Vakil, et al.,2008)**

Epidemiology And Prevalence of GERD

Gastroesophageal reflux disease (GERD) now accounts for a majority of upper gastrointestinal symptoms. **(Quigley .2004), (Post, et al.,2006)**,affecting up to 44% of the adult U.S. population monthly and 20% weekly **.(Dickman, et al.,2007)**

Epidemiologic studies show a prevalence of GERD symptoms in western countries ranging from 20% to 40%, **(Moayyedi, et al., 2007),** and in Asian countries ranging from 5% to 17% , the prevalence in Asian countries increases gradually . **(Wong, Kinoshita .2006)**

The prevalence of GERD is the greatest in North America and Europe, with the highest rates seen in the USA (13–29%), Sweden (17%), UK (10%), and Spain (10%)**. (Dent, et al., 2005)** its estimated cost is $24.1 billion annually .**(Richter. 2000), (Shaheen and Ransohoff . 2002)**

Gastro-oesophageal reflux disease may be moderately common in the Middle East, There are suggestions that the prevalence of gastro-oesophageal reflux disease is increasing in the Far East**. (Kang. 2004).** Reports suggest that GERD is

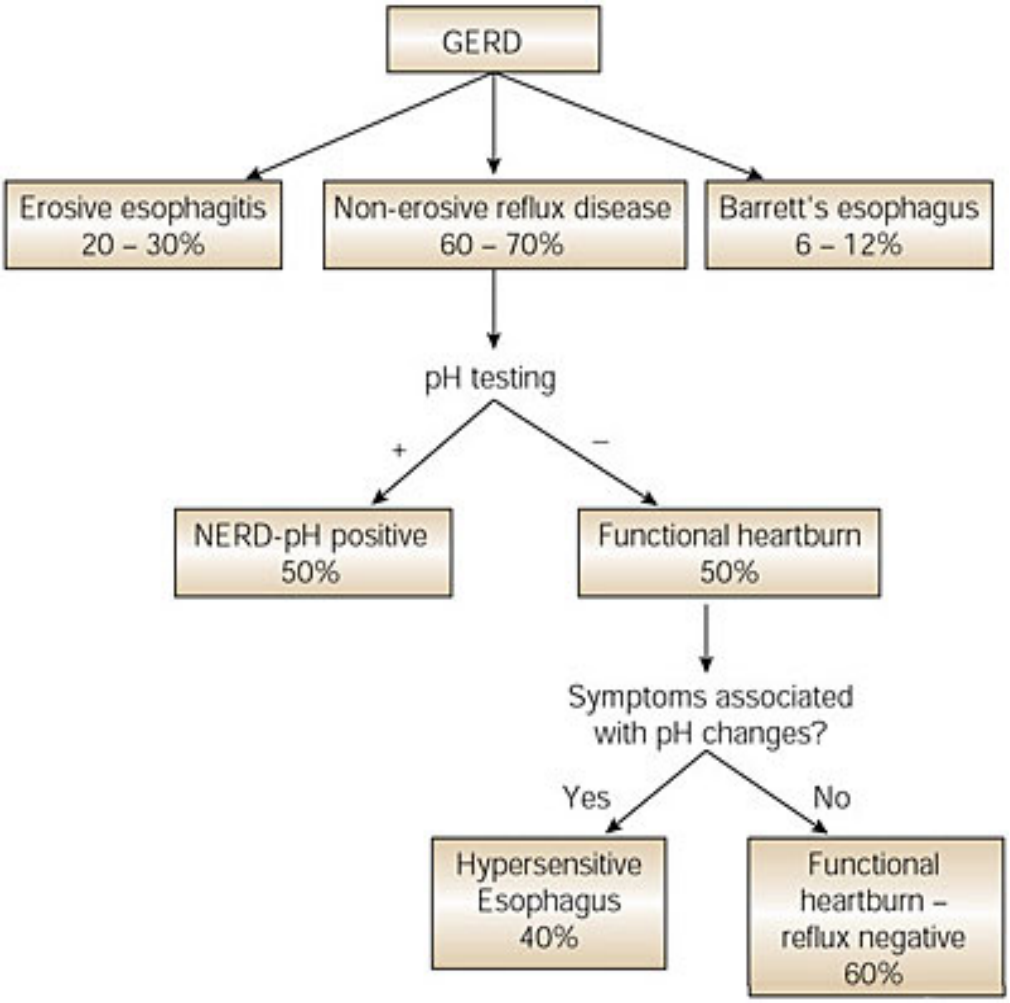
rare among black Africans, of 1319 barium meals performed by a single radiologist in Kenya, East Africa from 1961 to 1965, gastro-oesophageal reflux (GER) was detected in one patient (0.07%), **(Kang. 2004)**

A prospective study examining the frequency of GERD in 1030 consecutive barium meal examinations in Nigeria, West Africa, from 1970 to 1972, found 23 patients with GERD (2.2%). **(Kang. 2004).** In Cape Town, South Africa, 69 black patients with GERD were seen over a 25 years period, compared with 1867 cases in whites and 785 in 'coloureds'. Thus, blacks constituted only 2.5% of the GERD population, compared with 12% of all admissions. **(Kang. 2004)**

PRESENTATIONS OF GERD

Patients with GERD have manifestations of esophageal mucosal damages, such as reflux esophagitis (RE), non-erosive GERD (reflux disease) or negative endoscopy reflux disease (NERD) **(Dent, et al., 2005), (Koop, et al.,2005)**

Nonerosive reflux disease (NERD) and Erosive esophagitis are the main presentations of GERD. **(Fass .2007)**


GERD
Erosive esophagitis
20 – 30%
Non-erosive reflux disease
60 – 70%
Barrett's esophagus
6 – 12%
pH testing
+
–
NERD-pH positive
50%
Functional heartburn
50%
Symptoms associated
with pH changes?
Yes
No
Hypersensitive
Esophagus
40%
Functional
heartburn –
reflux negative
60%

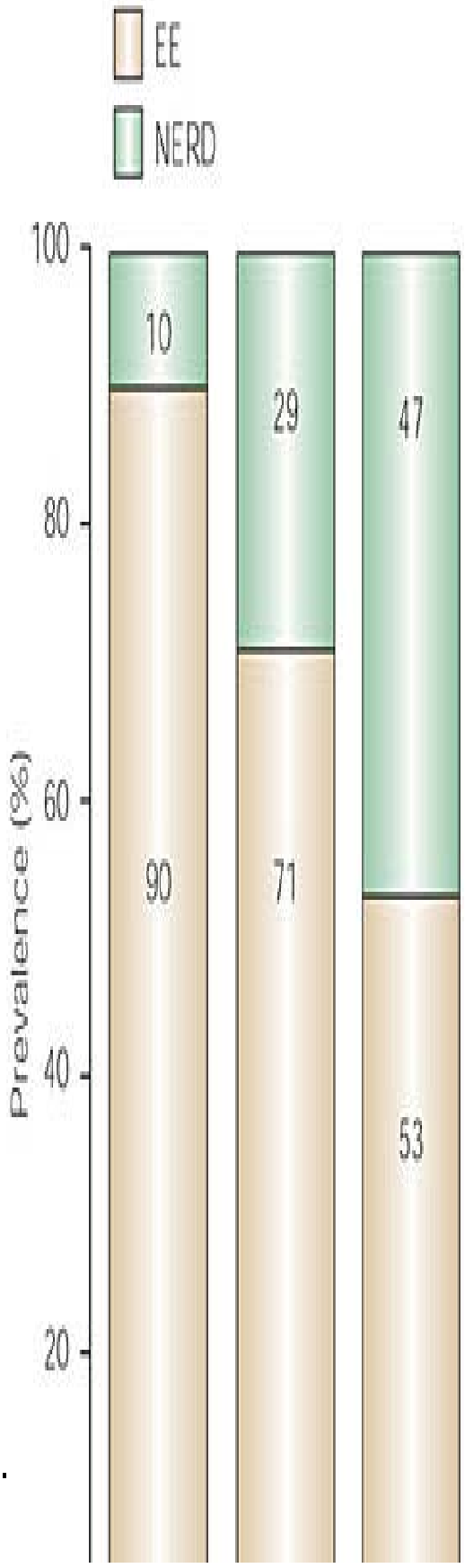

EE
NERD
100
80
60
40
20
Prevalence (%)
10
90
29
71
47
53

Figure (2).The global distribution of NERD and erosive esophagitis (EE)

Treatment of GERD

1: Medical treatment

Will discussed later

2: Surgical (Endoscopic) treatment

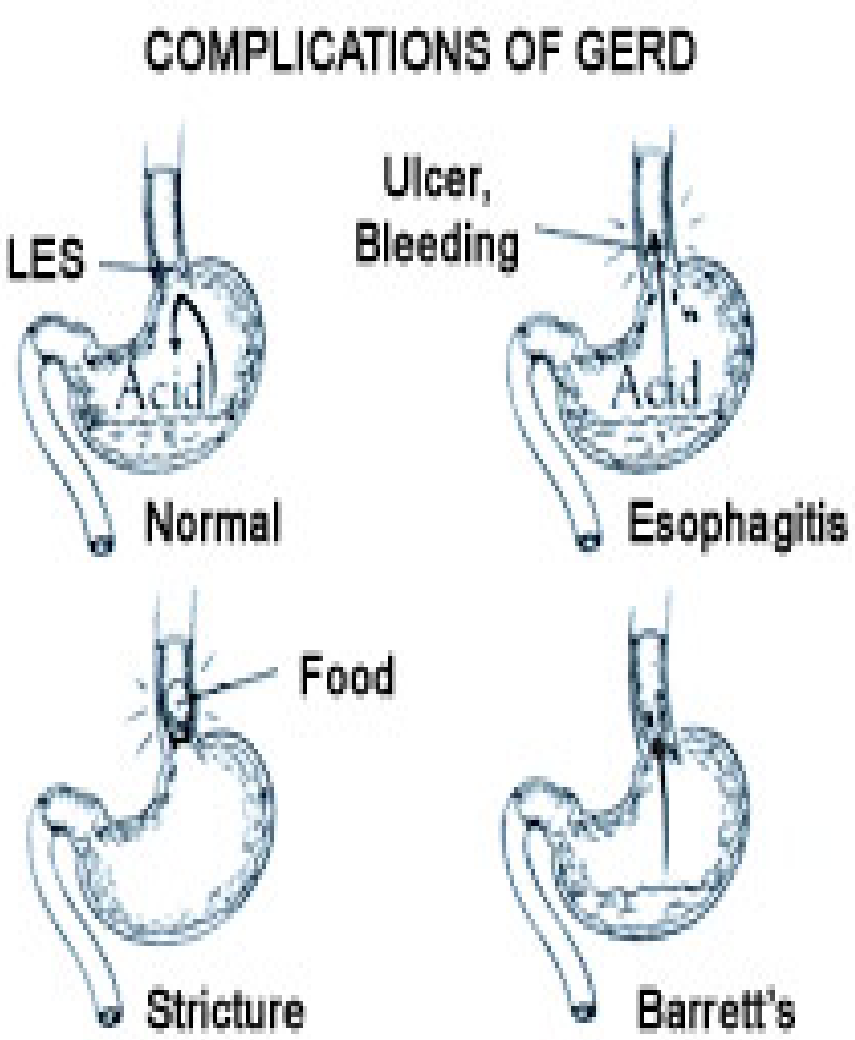
As seen in figures (3) , (4)

Figure (3). Endoscopic therapy (Stretta procedure) for reflux disease

Figure (4). Endoscopic therapy (EndoCinch) for reflux disease

Complications of GERD

As seen in figure



EROSIVE OESOPHAGITIS

Definition

The hallmark of erosive esophagitis on endoscopy is the presence of one or more erosions.

Epidemiology of Erosive esophagitis

Risk factors of erosive esophagitis

There are several risk factors associated with erosive esophagitis as follows**.**

1) Age

Old age has been shown to be associated with increased risk of erosive esophagitis . **(Sonnenberg , El-Serag . 1999).** A study demonstrated that the prevalence increases linearly with age among women, and peaks among men at the age of 50-70 years and thereafter declines**.(Nilsson , et al.,2004)**

In the elderly, the prevalence of erosive esophagitis is nearly the same among the general population, but complicated GERD appears to be more common than in young people . **(Hazzard . 2001).** Esophagitis wase almost twice in patients aged 60 years than in young people (81% vs 47%, $P < 0.002$). **(Collen , et al.,1995)**

The mean incidence rate of erosive esophagitis was 74% in the elderly and 64% in the younger patients and the frequency of symptoms was lower in the elderly group. **(Fass , et al.,2000).**

The percentage of time with pH < 4 was 32.5% in older patients with erosive esophagitis vs 12.9% in younger ones (P < 0.05). **(Zhu , et al.,1993)**

The prevalence of severe esophagitis increase with age: only 12% in GERD patients < 21 years old in comparison with 37% in patients > 70 years old had severe esophagitis. **(David and Johnson . 2004).**but The frequency of reflux episodes had been reported to be similar either in the elderly or in young people whereas the duration of individual reflux episodes seems to be longer in the elderly **(Whitaker . 2002).**However, it is not clear which factors lead to a more severe erosive esophagitis in the elderly, it seems to be multi-factorial ;The alteration may include a defective antireflux barrier, abnormal esophageal-clearance, altered esophageal mucosal resistance, and delayed gastric emptying **(Gawrieh and Shaker . 2003).** Several studies have shown that altered esophageal pain perception to acid in the elderly is the result of an ageing process that may be responsible for an increased severity of erosive esophagitis **(Fass, et al.,2000).** On the other hand, frequency and severity of atypical symptoms have been reported to be higher in elderly people with erosive esophagitis **.(Raiha, et al., 1991)**

So the peak age of onset of erosive esophagitis is 40-60 years and higher in males than in females. Old age and esophageal hiatal hernia are associated with more severe esophagitis **.(Li, et al.,2008)**

2) Sex

Studies showed that male gender is a risk factor for erosive esophagitis; whereas female is more likely to be associated with NERD **.(Fujiwara, et al.,2005)**, **(Lee, et al.,2006).** Less parietal cell mass in women may be underlining reasons for the lower risk of erosive esophagitis **(El-Serag, et al., 2005)**

In a recent study, the patients undergoing endoscopic examinations were analyzed. The detection rate of Erosive esophagitis was 7.46%, which was higher in males than in females. The ratio of male to female was 1.75: 1 suggesting that males have a higher susceptibility to Erosive esophagitis than females**.(Li, et al.,2008).**

3) Tea drinking

Tea drinking has previously only been studied in a case series of reflux episodes **(Chang, et al.,1997),** While from another previous population-based study, the tea drinking does not seem to be a risk factor for erosive esophagitis. **(Nilsson, et al., 2004)**

4) Coffee drinking

Coffee has been reported to be a reduced risk of reflux symptoms among coffee drinkers compared with non-coffee drinkers **.(Brazer, et al.,1995) ,(Chang, et al.,1997) ,(Nilsson,et al.,2004)**

5) Smoking