

Study of Chest Disorders in Non-Smoker Patients Complaining of Gastroesophageal Reflux Disease

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Abstract

Background: Gastroesophageal reflux disease (GERD) is a common disease that is often diagnosed based on typical symptoms of heartburn and regurgitation. In addition to these more classic manifestations, GERD is increasingly associated with extra-esophageal symptoms, including chronic cough, asthma, laryngitis, and aspiration pneumonia. Management of GERD may help in management of these respiratory diseases.

Aim of Study: To study the presence of chest diseases in non-smoker patients complaining of GERD.

Subjects and Methods: The study was carried out on 100 patients attended to Al-Hussein and Sayed Galal Al-Azhar University Hospitals in the period from September 2017 to May 2018. Patients were categorized into two groups: Group 1: Included 100 patients complaining of heartburn, epigastric pain and respiratory symptoms confirmed to have GERD by upper GI endoscope. Group 2: Include fifty patients apparently healthy (as regard GERD symptoms) confirmed that they were not have GERD by upper GI endoscope. All patients underwent history taking, examination, routine lab investigations, upper GI endoscopy, chest X-ray and spirometry. C.T. chest was done on need according to symptoms and chest X-ray finding.

Results: Respiratory disorders occurrence was more in GERD group than in negative group as regard GERD with statistically significant difference between the two groups in chronic laryngitis, bronchial asthma, COPD, and pneumonia, but no significant difference between the two groups was found as regard ILD.

Conclusion: GERD is a considerable risk factor for the development of respiratory disorders. This study proved that pulmonary symptoms was elevated among those with frequent GERD compared to those without GERD.

Key Words: GERD – Extraesophageal.

Introduction

GERD is defined as the presence of symptoms or lesions that can be attributed to the reflux of gastric

contents into the esophagus which is one of the most common disorders affecting the gastrointestinal tract. Patients with GERD commonly have symptoms, with approximately 20% experiencing heartburn, acid reflux or both at least once a week and approximately 40% reporting that such symptoms occur at least once a month. If extra-esophageal manifestations are taken into consideration, it is believed that the real prevalence of pathological reflux might be underestimated [1].

Unlike the distal esophagus, the airways are not protected by antireflux clearance mechanisms and intrinsic mucosal properties. It is therefore conceivable that even a single reflux episode extending beyond the esophagus may be sufficient to cause pharyngeal, laryngeal, and respiratory symptoms and signs. A second mechanism responsible for GERD is activation of refluxes involving the airways by reflux of gastric contents into the esophagus [2].

The endoscopic esophageal changes caused by reflux disease are not only helpful diagnostically, but also identify patients exposed to significant risk of disease chronicity. Further, the severity of esophagitis gives useful guidance as to the likelihood of success of a particular treatment [3].

Historically, pulmonary manifestations have been recognized as a potential consequence of GERD. A major advance in the understanding of extra-esophageal manifestations comes from the recognition that a significant number of patients with asthma or chronic cough, particularly if it is nocturnal, have gastroesophageal reflux as a trigger [4].

GERD was found to be the cause of chronic cough in up to 10% of patients when the diagnosis was made by history. In children, the prevalence

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of GERD as a cause of chronic cough is reported to be 4% to 15% [5].

Subjects and Methods

Design and setting: The study was carried out on 100 patients attended to Al-Hussein and Sayed Galal Al-Azhar University Hospitals in the period from September 2017 to May 2018. Patients were categorized into two groups: Group 1: Included fifty patients fifty patients complaining of heartburn, epigastric pain and respiratory symptoms confirmed to have GERD by upper GI endoscope. Group 2: Include fifty patients apparently healthy (as regard GERD symptoms) confirmed that they were not have GERD by upper GI endoscope.

All studied cases were subjected to: Full history taking, clinical examination, arterial blood gas analysis, Complete blood count, Erythrocyte sedimentation rate (ESR), Liver function tests, Renal function tests, Bleeding profile, upper GI endoscope, chest X-ray, C.T. chest was done on need according to symptoms and chest X-ray finding, Spirometry: Pulmonary function tests were performed for each subject (FEV1% of predicted, FVC% of predicted and FEV1/FVC %) using Geratherm Respiratory GmbH Blue Cherry V1.2.2.1 with a built-in computer. Each subject performed at least three spirometry maneuvers and the highest values were chosen.

Pre and post bronchodilator spirometry using short acting beta2 agonist.

Exclusion criteria include: Smoking, tuberculosis and respiratory system malegnancies.

Ethical consideration:

Ethical clearance was obtained from the Research Ethical Committee at Al-Hussein University Hospital. A signed written informed consent from patients or their relatives was obtained. Privacy and confidentiality were maintained throughout the study process. Subjects or their relatives received written notification of the intervention results.

Statistical analysis:

Data were analyzed using the SPSS computer package version 21.0 (SPSS Inc., Chicago, IL, USA). For descriptive statistics; the mean \pm SD was used for quantitative variables while the number and percentage were used for qualitative variables. Chi-square test (X^2) was used to assess the differences in frequency of qualitative variables while Fisher's exact test (FET) was applied if any expected cell values in a 2 x 2 table was <5 . Paired

samples *t*-test was applied in order to assess the differences in means of quantitative variables. The statistical methods were verified, assuming a significant level of $p < 0.05$.

Results

The study included 100 patients divided into two groups, Group (1): Fifty patients with heartburn and respiratory symptoms (mean age 43.58 ± 10.14) attending Al-Azhar University Hospitals during the period of the study confirmed to be positive GERD by upper GI endoscopy. **Group (2):** Fifty patients without heartburn (mean age 40.20 ± 8.85) confirmed to be negative GERD by upper GI endoscopy. No statistically significant difference was found between the two groups as regard age (p -value=0.071), No statistically significant difference was found between the two groups as regard sex (p -value=0.284). No statistically significant difference was found between the two groups as regard BMI (p -value=0.071).

In group 1 (GERD group) distribution of grades of GERD was as the following: Grade A: 30%, Grade B: 32%, Grade C: 20% and Grade D: 18% (Table 1).

Table (1): Distribution of grades of GERD.

Clinical characteristics	GERD Group	
	No=50	%
<i>Grades of GERD:</i>		
A	15	30.0
B	16	32.0
C	10	20.0
D	9	18.0

There was significant difference between the two groups as regard suffering from chronic laryngitis. (p -value < 0.001). The percentage of chronic laryngitis among GERD group was 44% compared to 12.0% of those without GERD (Fig. 1).

The study showed that 20.0% of patients with GERD suffered from COPD compared to 4.0% of those without GERD with statistical significant difference (Fig. 2).

The study showed that 24.0% of patients with GERD suffered from bronchial asthma compared to 6.0% of those without GERD with statistical significant difference (Fig. 3).

The study showed that 12.0% of patients with GERD suffered from pneumonia which was not manifested in those without GERD with statistical significant difference (Fig. 4).

The study also showed that 4.0% of patients with GERD suffered from ILD compared to 2.0% of those without GERD with no statistical significant difference (Fig. 5).

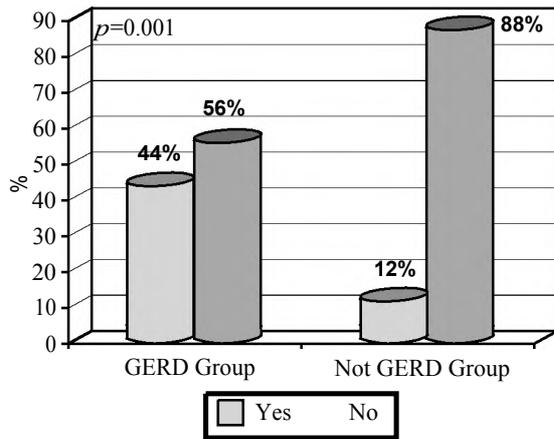


Fig. (1): Comparison between both groups regarding chronic laryngitis distribution.

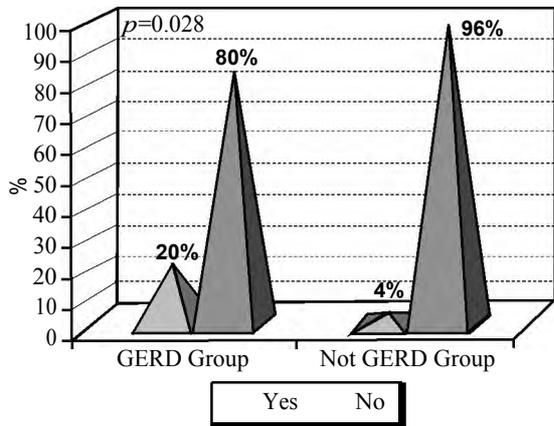


Fig. (2): Comparison between both groups regarding COPD distribution.

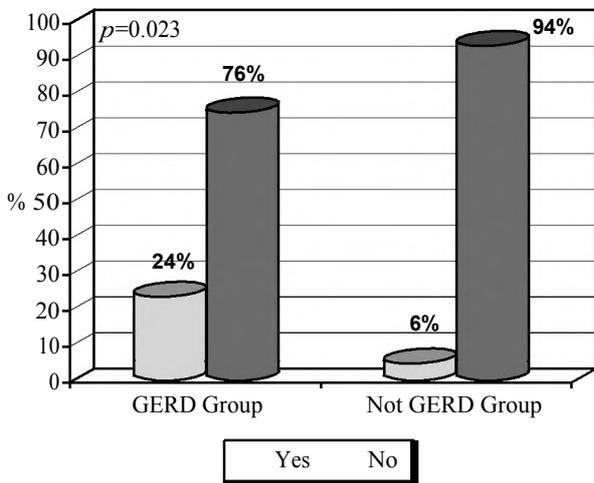


Fig. (3): Comparison between both groups regarding bronchial asthma distribution.

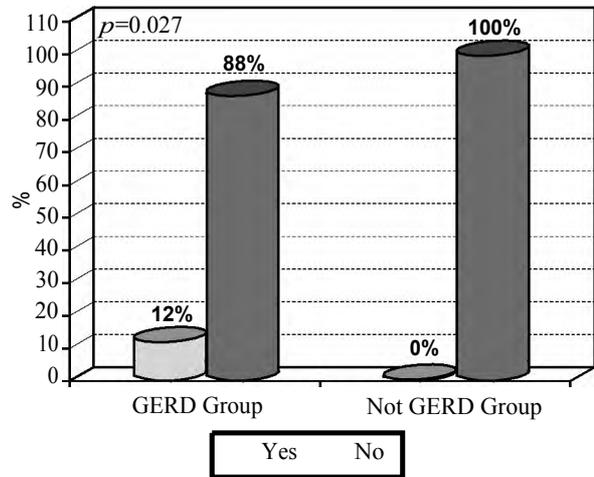


Fig. (4): Comparison between both groups regarding pneumonia distribution.

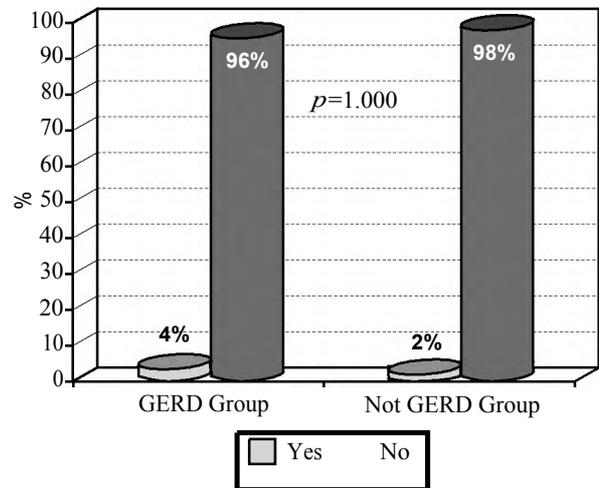


Fig. (5): Comparison between both groups regarding ILD distribution.

Discussion

GERD is a common, chronic disease that affects up to 20% of the adult population in the United States [6]. It is the most common gastrointestinal diagnosis recorded during visits to outpatient clinics [7]. GERD contributes in excess of 10 billion \$ in annual direct health care costs, with the majority of cost directed to proton pump inhibitors (PPI) [8]. Our results showed that the percentage of chronic laryngitis among GERD group was 44%, this result was near to the finding of Maha M et al., 2010 [9]. Similarly, Richard R. et al., 2006 who was searching for the unusual presentation of reflux by examination of ear nose and respiratory system, the percentage of pharyngolaryngitis was 45% [10]. There was disagreement with El-Serag and Sonnenberg, 1997 where the laryngitis was about 2% the study was too large on huge number of persons (101363 person) the study was about Co-

morbid Occurrence of Laryngeal or Pulmonary Disease With Esophagitis in United States Military Veterans [11]. As regard COPD our study showed that 20.0% of patients with GERD suffered from COPD compared to 4.0% of those without GERD with statistical significant difference. These results agree with that reported by a study in which the aim was to search for the relation between acid reflux and common respiratory diseases [12]. Disagreement with our work was reported by Terada et al., 2008 in this study there was no exclusion of smokers the study was searching for the impact of GERD on COPD exacerbations the percentage of COPD in this study was 65% among GERD patients [13]. Our work showed that 24.0% of patients with GERD suffered from bronchial asthma compared to 6.0% of those without GERD with statistical significant difference. This is in agreement with Chan et al., 2011, who carried out a study to assess the effect proton pump inhibitors for the treatment of asthma in adults the patients on this study was known to be GERD the percentage of asthma an all studied patients was 25% patients [14]. As regard pneumonia our study showed that 12.0% of patients with GERD suffered from pneumonia which was not manifested in those without GERD with statistical significant difference. In our study there was 6 patients of 50 (GERD group) diagnosed as pneumonia by history, examination, lab investigations and radiology, 5 of them gave history of similar symptoms several times in the past they receive nonspecific medications by non-specialists, this notification suggest undiagnosed recurrent pneumonia in those patients. Agreement with this study as regard percentage of pneumonia among GERD patients was reported by a study was studying the relation between GERD and respiratory symptoms [15]. Different results was reported by El-Serag and Sonnenberg, 1997 where the pneumonia was about 4% the study was too large on huge number of persons (101363 person) [11]. In this study 4.0% of patients with GERD suffered from ILD compared to 2.0% of those without GERD with no statistical significant difference. This finding in match with a study made by Maha M. et al., 2010 who found the percentage of ILD among 472 GERD patients was 3% [9].

Conclusion:

The study tried to focus and Understand the relationships between GERD and respiratory diseases to enable physicians to approach the right medical management of such cases.

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دراسة التغيرات الصدرية فى المرضى غير المدخنين الذين يعانون من إرتجاع الحامض المعدى للمرى

وشملت الدراسة مجموعتين:

مجموعة (١): خمسون مريضاً يعانون من حرقه الفؤاد وأعراض تنفسية (متوسط العمر 43.08 ± 10.14) الذين حضروا مستشفيات الأزهر خلال فترة الدراسة تم التأكد أن إيجابى الأصابة بإرتجاع المرئ من خلال المنظار العلوى للجهاز الهضمى.

مجموعة (٢): خمسون مريضاً بدون حرقه (متوسط العمر 40.20 ± 8.80) تم التأكد أن يكونوا سلبى الأصابة بإرتجاع المرئ من خلال المنظار العلوى للجهاز الهضمى.

خضع جميع المرضى لما يلى:

١- أخذ تادىخ طبي مفصل.

٢- الإختبارات السريرية:

- قياس المؤشرات الحيوية.

- فحص القلب.

- فحص البطن.

- فحص لباطراف السفلية والعلوية .

- قياسات أنثروبومترية.

- فحص محلى الصدر.

٣- التحقيقات:

- المنظار العلوى، تم تصنيف أرتجاع المرئ وفقاً لتصنيف لوس أنجلوس.

- أشعة الصدر السينية العادية (الرؤية الأمامية - الخلفية والجانبية).

تشمل المختبرات الروتينية الكاملة ما يلى:

- عد الدم الكامل.

- معدل ترسيب كرات الدم الحمراء.

- إختبارات وظائف الكبد.

- إختبارات وظائف الكلى.

- حالة النزيف (وقت البروثرومبين والتركيزه).

- غازات الدم الشريانى.

- مقياس (وظائف) تنفس.

النتائج الرئيسية لهذه الدراسة هى:

لم يتم العثور على فروق ذات دلالة إحصائية بين المجموعتين فيما يتعلق بالعمر.

لم يتم العثور على فروق ذات دلالة إحصائية بين المجموعتين فيما يتعلق بالجنس.

لم يتم العثور على فروق ذات دلالة إحصائية بين المجموعتين فيما يتعلق مؤشر كتلة الجسم.

فى المجموعة ١ (مجموعة إرتجاع المرئ) كان توزيع درجات إرتجاع المرئ كما يلى:

الدرجة أ: ٣٠٪، الدرجة ب: ٣٢٪، الدرجة ج: ٢٠٪ والدرجة د: ١٨٪.

أظهرت الدراسة أن ٤٤٪ (٢٢ مريض) من مرضى إرتجاع المرئ يعانون من إلتهاب الحنجرة المزمن مقارنة بـ ١٢٪ (٦مرضى) من المرضى الذين يعانون من إرتجاع المرئ .

فيما يتعلق بمرض الإنسداد الرئوي المزمن أظهرت هذه الدراسة أن ٢٠٪ (١٠ مريضاً) من المرضى الذين يعانون من إرتجاع المريء يعانون من مرض الإنسداد الرئوي المزمن مقارنة بنسبة ٤٪ (٢ مريضاً) من الذين يعانون من اضطرابات إرتجاعي ودموي مع فرق إحصائي كبير. كما أظهرت الدراسة أن ٢٤٪ (١٢ مريضاً) من المرضى الذين يعانون من إرتجاع المريء يعانون من الربو الشعبي مقارنة بـ ٦٪ (٣ مريضاً) من المرضى الذين يعانون من إرتجاع المريء مع فرق إحصائي كبير. أسفرت الدراسة أيضاً أن ٤٪ (٢ مريضاً) من المرضى الذين يعانون من إرتجاع المريء يعانون من المرض الرئوي الخلالى مقارنة بـ ٢٪ (١ مريضاً) من أولئك الذين لا يعانون من إرتجاع المريء مع عدم وجود فروق ذات دلالة إحصائية. وأظهرت الدراسة أيضاً أن ١٢٪ (٦ مريضاً) من المرضى الذين يعانون من إرتجاع المريء يعانون من الإلتهاب الرئوي الذي لم يتجلى في تلك التي لا يعانون من إرتجاع المريء مع فرق إحصائي كبير.