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Laryngopharyngeal Reflux Disease in North of Jordan, Prevalence, Awareness and Risk Factors

Hadeel Allan[1*], Yazan Kanaan[2], Ahmad Al Omari[2]

[1] Public Health Department, Faculty of Medicine, Jordan University of Science and Technology, P O Box 3030, Irbid 22110, Jordan

[2] Department of Special surgery, Division of Otolaryngology, Faculty of Medicine, Jordan University of Science and Technology, P O Box 3030, Irbid 22110, Jordan

*Corresponding author:

hadeel_allan25@yahoo.com

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Abstract

Background: laryngopharyngeal reflux (LPR) is the result of retrograde flow of gastric contents to the laryngopharynx, where it comes in contact with tissues of the upper aero-digestive tract.

Aims: We aimed to determine the prevalence and awareness of LPR in general population of North Jordan, along with identifying associated risk factors.

Methodology: A cross-sectional study was carried out to determine the prevalence of LPR by utilizing the Reflux Symptoms Index (RSI) questionnaire among a randomly chosen group of adult participants. Those scoring ≥13 on the RSI were identified as LPR patients, while those scoring <13 were classified as non- laryngopharyngeal reflux (LPR) subjects. The questionnaire was completed by a total of 500 participants, comprising 275 males and 225 females.

Results: The prevalence of LPR in the North Jordanian population was determined to be 28%, with no statistically significant difference observed between genders ($p > 0.05$). Notably, the age group above 40 years exhibited a higher prevalence rate. Tobacco smoking emerged as the most significant factor associated with LPR. Remarkably, only 1% of participants demonstrated awareness of LPR and its relationship with throat or voice symptoms.

Conclusion: laryngopharyngeal reflux (LPR) was found to be prevalent in 28% of the North Jordanian population, with a strikingly low level of awareness (1%). The study identified tobacco smoking as a prominent risk factor for LPR. Furthermore, individuals who reported consuming higher amounts of caffeinated beverages displayed a greater incidence of LPR. However, the study did not examine the relationship between alcohol consumption and LPR due to the absence of alcohol-drinking participants in the sample.

Keywords: Laryngopharyngeal reflux, Dysphonia, Prevalence, Gastroesophageal reflux.

INTRODUCTION

Laryngopharyngeal reflux (LPR) is characterized by the retrograde reflux of gastroduodenal contents into the larynx and pharynx, resulting in significant damage to the upper aerodigestive tract. Unlike gastroesophageal reflux disease (GERD), the majority of LPR patients do not exhibit esophagitis or experience the primary symptom of heartburn [1]. LPR presents with a diverse range of symptoms, including laryngeal irritation such as coughing, sore throat, hoarseness, dysphonia, and globus pharyngeus [2]. The injurious effects of reflux can occur through direct mechanisms involving exposure to gastric acid, pepsin, and bile salts, or indirect mechanisms resulting from repetitive trauma caused by vagally mediated coughing and throat clearing [1,3]. The Reflux Symptom Index (RSI) is a reliable and valuable diagnostic tool consisting of a nine-item questionnaire designed to evaluate various symptoms associated with LPR. Each item is graded on a scale from 0 (indicating no problem) to 5 (representing severe problems), with a maximum total score of 45 indicating the most severe symptomatology [4,5]. This study aimed to employ the Reflux Symptom Index (RSI) as a screening tool to determine the prevalence of LPR in the North Jordanian population and identify any predisposing or associated factors contributing to the development of LPR.

METHODOLOGY

After obtaining approval from the Institutional Review Board, we conducted a study on the adult population in the northern region of Jordan. Our sample, consisting of more than 600 individuals, was randomly selected. To gather data, we provided the participants with an Arabic version of the RSI questionnaire, either in person or by email or messaging applications such as WhatsApp. Detailed instructions on completing the questionnaire were provided to the participants.

A total of 500 participants completed the RSI questionnaire, which included questions about LPR symptoms as well as other factors such as age, gender, smoking and alcohol consumption, caffeine intake, presence of chronic diseases, past surgical history, and current medication use. Only individuals above the age of 18 were included in the study. The prevalence of LPR was determined by assessing the RSI score, with a score of ≥ 13 indicating its presence [4].

Statistical analysis of various variables, including the RSI score, age, gender, parameters, smoking and alcohol habits, medical and surgical history, and medication use, was performed using SPSS Statistics 20 software. A p-value of less than 0.05 (typically ≤ 0.05) was considered statistically significant

RESULTS

Five hundred questionnaires were completed and returned by participants, with 275 being male and 225 females. Patient data can be found in Table 1. The average age of the participants was 42.5 ± 13.8 years. The

majority of participants, 348 in total, fell into the age group of 20-49. Among the male participants, 115 of them (41.8%) were smokers, consuming an average of 20 cigarettes per day for an average duration of 14.2 years. They also reported a daily caffeine consumption ranging from 0 to 200cc. Among the female participants, 15.5% (n=35) were smokers, with an average of 10 cigarettes per day and a duration of 6.3 years. The average daily caffeine consumption for these female smokers was 50cc (Table 1).

Table 1: Patient Demographics and Habits

RSI Symptoms	Number of Participants	Percentage
Hoarseness or a problem with your voice	108	21.6%
Clearing your throat	275	55%
Excess throat mucus or postnasal drip	186	37.2%
Difficulty swallowing food, liquids, or pills	179	35.8%
Coughing after you ate or after lying down	90	18%
Breathing difficulties or choking episodes	87	14.7
Troublesome or annoying cough	120	24%
Sensations of something sticking in your throat or a lump in your throat	210	42%
Heartburn, chest pain, indigestion, or stomach acid coming up	200	40%

Out of the total of 500 participants, only five individuals were familiar with the term LPR and understood the distinction between LPR and the typical symptoms of Gastroesophageal reflux disease (GERD). One hundred fifty participants, accounting for 30% of the total, reported having one or more diseases. The most frequently mentioned diseases were cardiovascular conditions (n 60; 40% of the sample), followed by gastrointestinal issues (n 27; 18% of the sample), musculoskeletal ailments (n 21; 14% of the sample), respiratory disorders (n 18; 12% of the sample), thyroid disorders (n 18; 12% of the sample), and other disorders (4% of the sample).

Our study's results demonstrated that in the northern population of Jordan, the occurrence of LPR was observed to be 28%, and there was no significant variation between males and females ($p > 0.05$). The age group above 40 years exhibited a higher prevalence rate. Tobacco smoking was identified as the primary factor associated with LPR. Merely 1% of the participants possessed knowledge about LPR and its connection to throat or voice symptoms. Out of all the participants, the most frequently reported symptom of LPR was throat clearing, accounting for 55% (n 275), while the sensation of something stuck in the throat was the second most common symptom, reported by 42% (n 210) of the participants (Table 2).

Table 2: The participants of the study reported the frequency of symptoms included in the reflux symptom index.

RSI Symptoms	Number of Participants	Percentage
Hoarseness or a problem with your voice	108	21.6%
Clearing your throat	275	55%
Excess throat mucus or postnasal drip	186	37.2%
Difficulty swallowing food, liquids, or pills	179	35.8%
Coughing after you ate or after lying down	90	18%
Breathing difficulties or choking episodes	87	14.7
Troublesome or annoying cough	120	24%
Sensations of something sticking in your throat or a lump in your throat	210	42%
Heartburn, chest pain, indigestion, or stomach acid coming up	200	40%

DISCUSSION

In a broader context, the term "Laryngopharyngeal reflux" (LPR) is generally utilized to denote the retrograde flow of gastric contents or acid into the larynx or pharynx. While nocturnal acid reflux is more commonly observed, LPR can manifest throughout the day or night, potentially resulting in detrimental effects on the vocal cords and throat. The prevalence of LPR-related symptoms in the general population is estimated to range between 5% and 30% [6].

The terms "Silent reflux" and "Laryngopharyngeal reflux" are often used interchangeably. Individuals with LPR commonly encounter symptoms that prompt them to seek medical assistance, such as coughing, hoarseness of voice, or a feeling of a lump in the throat. However, most patients do not experience the typical signs of gastroesophageal reflux, such as heartburn and indigestion. Hence, this condition is commonly referred to as "Silent reflux." Factors such as smoking, alcohol consumption, obesity, dietary habits, and sleeping position have been implicated in the development of LPR [7].

Significant damage can occur to the laryngopharyngeal tissue when the esophageal sphincters, which act as physiological barriers, fail to prevent gastric content from reaching the throat. This damage is caused by gastric reflux. The respiratory epithelium is more sensitive to acid compared to the digestive epithelium, so even a small amount of acid reflux can cause severe harm, especially to the larynx. However, it's important to note that other gastric contents also play a crucial role in the mechanism and pathophysiology of laryngopharyngeal epithelial damage. Some authors argue that acid reflux alone is insufficient to cause injury, and that a combination of acid and gastric enzymes, particularly pepsin, is necessary and causes more damage to the epithelium [8]. LPR should be considered as a potential cause for various nonspecific symptoms in the throat and laryngopharynx, including coughing, sensation of a lump in the throat, difficulty

swallowing, bitter taste in the throat, feeling of post-nasal drip, frequent throat clearing, and changes in voice. LPR can also manifest with non-specific signs during laryngoscopy, such as redness and swelling, without any definitive diagnostic features. Therefore, confirming an accurate diagnosis of LPR can be challenging.

Researchers, led by Belafsky and colleagues, have developed reliable and validated tools for diagnosing and assessing LPR patients. Despite ongoing debates, the reflux symptom index (RSI) and the reflux finding score (RFS) have proven to be valuable and cost-effective instruments for diagnosing LPR [4,9].

An additional effective diagnostic modality is multichannel intraluminal impedance pH monitoring, which allows for the detection of both acid and non-acid reflux. However, numerous studies indicate that the aforementioned modalities exhibit limited sensitivity and specificity as diagnostic tests for LPR [10].

A recent study has presented a novel diagnostic marker that shows promise in enhancing the diagnostic accuracy of LPR. This marker involves the utilization of the pepsin assay to identify any reflux occurring beyond the esophagus. Additionally, other potential biomarkers such as carbonic anhydrase and E-cadherin have been proposed for LPR diagnosis; however, further research is necessary to establish their diagnostic utility [11,12]. Furthermore, there exists significant clinical evidence supporting the use of proton pump inhibitors (PPIs) as empirical therapy for both diagnosing certain contentious cases and treating LPR concurrently [13].

Consensus regarding the optimal treatment approach for LPR has been challenging to establish, necessitating a tailored management strategy for each individual case. Initial treatment typically involves recommending lifestyle modifications and dietary changes, with further interventions considered if needed. Implementing measures such as weight loss, smoking cessation, and avoidance of caffeine and alcohol consumption may lead to potential regression of both the clinical signs and symptoms associated with LPR. However, in certain instances, lifestyle and dietary adjustments alone may not suffice in effectively managing LPR. Consequently, medical treatment utilizing proton pump inhibitors (PPIs) becomes necessary. Although there is considerable variation in the response of LPR patients to PPI therapy, the appropriate course of action involves administering full dose PPIs (twice daily) for a prolonged duration of at least 2 to 3 months. This approach is expected to improve the disease and prevent its adverse impact on the patient's quality of life. Surgical intervention is typically considered a last resort and is reserved for severe refractory cases of LPR [7,13].

CONCLUSION

In conclusion, this study revealed a high prevalence of LPR in the North Jordanian population, particularly among individuals aged 40 and above. The awareness of LPR and its symptoms was found to be extremely

low. Tobacco smoking emerged as the most significant risk factor, while increased consumption of caffeinated beverages was also associated with higher incidence. The study emphasizes the need to enhance public awareness, improve early detection, and promote lifestyle modifications such as smoking cessation and reduced caffeine intake. Diagnosis of LPR requires a combination of detailed history and thorough laryngoscopic examination, along with objective tests like biomarker analysis and multichannel intra-luminal impedance pH monitoring. Treatment should be individualized, focusing on lifestyle changes and appropriate medication. Early treatment is crucial to prevent serious long-term complications. Further research is required to better understand the mechanisms of LPR, evaluate the impact of alcohol consumption, and assess different treatment approaches. Increasing awareness, early diagnosis, and comprehensive management are keys to improving the quality of life for LPR patients and reducing its overall impact.

Conflicts of Interest: None of the authors has a conflict of interest to declare.

This manuscript has been read and approved by all the authors, and that each author believes that the manuscript represents honest work.

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مرض الارتجاع الحنجري البلعومي في شمال الأردن، الانتشار والوعي وعوامل الخطور

هديل علان[1]، يزن كنعان[2]، أحمد العمري[2]

[1] قسم الصحة العامة، كلية الطب، جامعة العلوم والتكنولوجيا الأردنية، ص.ب. 3030، إربد 22110، الأردن.

[2] قسم الجراحة الخاصة، قسم الأنف والأذن والحنجرة، كلية الطب، جامعة العلوم والتكنولوجيا الأردنية، ص. ص. ب 3030، إربد 22110، الأردن.

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الملخص

الخلفية والاهداف: الارتجاع الحنجري البلعومي (LPR) هو نتيجة التدفق الارتجاعي لمحتويات المعدة إلى الحنجرة والبلعوم حيث تتلامس مع أنسجة الجهاز الهضمي العلوي. و نهدف إلى تحديد مدى انتشار الارتجاع الحنجري البلعومي (LPR) والوعي به لدى عامة سكان شمال الأردن، إلى جانب تحديد عوامل الخطر المرتبطة به.

منهجية الدراسة: أُجريت دراسة مقطعية لتحديد مدى انتشار الارتجاع الحنجري البلعومي من خلال استخدام استبيان مؤشر أعراض الارتجاع بين مجموعة مختارة عشوائياً من المشاركين البالغين. تم تحديد الأشخاص الذين حصلوا على ≤13 درجة في مؤشر أعراض الارتجاع البلعومي على أنهم مرضى بالارتجاع الحنجري البلعومي، بينما تم تصنيف الأشخاص الذين حصلوا على أقل من 13 درجة على أنهم غير مصابين بالارتجاع الحنجري البلعومي. تم إكمال الاستبيان من قبل ما مجموعه 500 مشارك، منهم 275 من الذكور و225 من الإناث.

النتائج: تم تحديد معدل انتشار الارتجاع البلعومي البلعومي المريئي لدى سكان شمال الأردن بنسبة 28%، ولم يلاحظ أي فرق ذي دلالة إحصائية بين الجنسين ($p > 0.05$). والجدير بالذكر أن الفئة العمرية فوق 40 سنة أظهرت معدل انتشار أعلى. برز تدخين التبغ باعتباره العامل الأكثر أهمية المرتبط بالتهاب اللثة الروماتيزمي. ومن اللافت للنظر أن 1% فقط من المشاركين أظهروا وعيًا بالتهاب الحنجرة الرئوية الرئوية وعلاقته بأعراض الحلق أو الصوت.

الاستنتاج: وُجد أن الارتجاع الحنجري البلعومي منتشر لدى 28% من سكان شمال الأردن، مع انخفاض مستوى الوعي به بشكل لافت للنظر (1%). حددت الدراسة تدخين التبغ كعامل خطر بارز للإصابة بالارتجاع الحنجري البلعومي. علاوة على ذلك، أظهر الأفراد الذين أبلغوا عن تناول كميات أكبر من المشروبات التي تحتوي على الكافيين نسبة أكبر من الإصابة بالارتجاع الحنجري البلعومي. ومع ذلك، لم تفحص الدراسة العلاقة بين استهلاك الكحول و الارتجاع الحنجري البلعومي بسبب عدم وجود مشاركين يشربون الكحول في العينة.

الكلمات الدالة: الارتجاع الحنجري البلعومي، عسر البلعوم، عسر البلعوم، انتشار، الارتجاع المعدي المريئي.