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REVIEW ARTICLE

Relation between chronic rhinosinusitis and gastroesophageal reflux in adults: systematic review[☆]

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KEYWORDS

Rhinosinusitis;
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pH-metry;
Proton pump inhibitor

Abstract

Introduction: The relationship between gastroesophageal reflux disease (GERD) and chronic rhinosinusitis (CRS) is still a controversial issue in literature.

Objective: A systematic review of the association between these two diseases in adult patients.

Methods: Systematic review in PubMed and Cochrane Database with articles published between 1951 and 2015. We included all articles that specifically studied the relationship between CRS and GERD.

Results: Of the 436 articles found, only 12 met the inclusion criteria. Eight cross-sectional articles suggest a relation between CRS and GERD, especially on CRS that is refractory to clinical or surgical treatment. However, the groups are small and methodologies are different. Four other longitudinal studies have assessed the effect of treatment with proton pump inhibitors (PPIs) on the improvement of symptoms of CRS, but the results were conflicting.

Conclusions: There seems to be relative prevalence of reflux with intractable CRS. There is still a lack of controlled studies with a significant number of patients to confirm this hypothesis. Few studies specifically assess the impact of treatment of reflux on symptom improvement in patients with CRS.

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PALAVRAS-CHAVE

Rinossinusite;
 Refluxo
 laringofaríngeo;
 Doença do refluxo
 gastroesofágico;
 pHmetria;
 Inibidor de bomba de
 prótons

Relação entre rinossinusite crônica e refluxo gastroesofágico em adultos: revisão sistemática**Resumo**

Introdução: A relação entre a Doença do Refluxo Gastroesofágico (DRGE) e a Rinossinusite Crônica (RSC) ainda é tema de controvérsia em literatura.

Objetivo: Revisão sistemática sobre a associação entre essas duas doenças em pacientes adultos.

Método: Revisão sistemática no Pubmed e Cochrane Database com os artigos publicados entre 1951 e 2015. Foram incluídos todos os artigos que estudassem especificamente a relação entre RSC e DRGE.

Resultados: Dos 436 artigos encontrados, apenas 12 satisfaziam os critérios de inclusão. Oito artigos transversais sugerem relação da RSC com a DRGE, especialmente sobre a RSC refratária a tratamento clínico ou cirúrgico prévio. No entanto, os grupos são pequenos e as metodologias são muito diferentes. Outros quatro estudos longitudinais avaliaram o efeito do tratamento com Inibidores de Bomba de Prótons (IBP) sobre a melhora dos sintomas de RSC, porém os resultados foram discordantes.

Conclusões: Parece haver relação de prevalência de refluxo e RSC de difícil controle. Ainda faltam estudos controlados com um número expressivo de pacientes para que se confirme essa hipótese. São escassos os estudos que avaliem especificamente o impacto do tratamento de refluxo na melhora dos sintomas em pacientes com RSC.

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Introduction

Chronic rhinosinusitis (CRS) remains a major problem of public health worldwide.¹ The broad consensus for recommended treatment is based on an optimal medical treatment emphasizing the use of corticosteroids.^{2,3} Endoscopic nasal surgery (ENS) is indicated for cases that fail maximum medical treatment. However, multiple factors have been implicated as reasons that cases of CRS become refractory after optimized treatment including genotypic or phenotypic alteration of the mucosa, scars and synechia, allergies, smoking and gastroesophageal acid reflux.^{4,5}

Especially in children many studies have postulated a relationship between CRS and acid reflux, both gastroesophageal reflux disease (GERD) and laryngopharyngeal reflux (LPR).⁶⁻⁸ However, it is difficult to establish a direct relationship between CRS and GERD, since both entities are highly prevalent, which makes it easier for them to coexist independently.⁹ In addition, to date there is no documented evidence of this possible relationship in adults.

Some theories of a relation between acid reflux and CRS were raised. The first is the direct exposure of the nasal and nasopharyngeal mucosa to gastric acid, causing inflammation of the mucosa and impaired mucociliary clearance, which could cause obstruction of sinus ostia and recurrent infections.^{10,11} It is known that pH variations affect ciliary motility and morphology in the respiratory mucosa.¹²

The second hypothesis is a relationship mediated by the vagus nerve, a mechanism already proven in the lower airway^{13,14} and in the nasal mucosa of patients with rhinitis,¹⁰ but not in patients with CRS. Dysfunction of the autonomic nervous system can lead to reflex sinonasal

swelling and inflammation, and consequent blockage of the ostia. Wong et al.¹⁵ demonstrated that by infusing saline with hydrochloric acid in the lower esophagus of healthy volunteers, there was increased production of nasal mucus, increased score of nasal symptoms, and reduced peak nasal inspiratory flow, which would support this theory.

A final mechanism would be the direct role of *Helicobacter pylori* (*H. pylori*). Koc et al.¹⁶ observed *H. pylori* present in nasal polyps, but not in control tissues, whereas Morinaka et al.¹⁷ found *H. pylori* through polymerase chain reaction (PCR) in the nasal mucosa of patients who have CRS and gastroesophageal reflux complaints. However there are conflicting findings in the literature as to whether there is a greater frequency of *H. pylori* in the nasal mucosa of patients with CRS.¹⁸

More importantly, previous review studies failed to show a clear evidence-based relationship between CRS and GERD^{19,20} in adults. Since these reviews were published at least four years ago, our objective was a new systematic review on the topic, to gather all the current evidence published around this issue, and to evaluate the quality and relevance of the interaction between GERD and CRS in adults.

Methods

For the implementation of this systematic review, we selected all the items present in the PubMed library, developed by the National Center for Biotechnology Information (NCBI) of the US National Library of Medicine (NLM) (www.ncbi.nlm.nih.gov/PubMed), and in the library of the

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