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REVIEW ARTICLE

Polymorphisms in chronic rhinosinusitis with nasal polyps – a systematic review☆,☆☆

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KEYWORDS
Polymorphism;
Rhinosinusitis;
Polyps

Abstract
Introduction: Chronic rhinosinusitis with nasal polyps is a multifactorial disease with a complex pathophysiology involving multiple genetic and environmental factors.
Objective: The purpose of this work review is to focus on the importance of genetic studies in chronic rhinosinusitis with nasal polyps besides the several barriers that exists for its understanding.
Methods: A systematic review on studies of association between single nucleotide polymorphisms and chronic rhinosinusitis with nasal polyps based on a PubMed/Medline and Periódicos

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CAPES search of all articles published between January 2005 and January 2015 was made. The search was guided on studies containing the terms polymorphisms, rhinosinusitis, and polyps.
Results: Two studies found an association of MMP-9 and MMP-2 polymorphisms and chronic rhinosinusitis with nasal polyps, but not in patients with recurrent nasal polyps. Other studies found an association of nasal polyps with MMP-9 polymorphisms, but not with MMP-2 ones. There is evidence of an association of LTC4S, NOS2A, PTGDR, MET, COX-2, OSF-2, and LF polymorphisms and the risk of developing nasal polyps, especially when combined with chronic allergic rhinitis and asthma.
Conclusion: Genetic studies on chronic rhinosinusitis with nasal polyps are promising and may offer insights into its pathophysiology, which is likely affected by multiple genetic factors.

PALAVRAS-CHAVE
Polimorfismo;
Rinossinusite;
Pólipos

Polimorfismos na rinossinusite crônica com pólipos nasais - uma revisão sistemática

Resumo
Introdução: A rinossinusite crônica com pólipos nasais é uma doença multifatorial com uma fisiopatologia complexa envolvendo múltiplos fatores genéticos e ambientais.
Objetivo: O objetivo deste trabalho é enfatizar a importância dos estudos genéticos na rinossinusite crônica com pólipos nasais, além das diversas barreiras existentes para sua compreensão.
Método: Realizou-se uma revisão sistemática de estudos de associação entre polimorfismos de nucleotídeo único e rinossinusite crônica com pólipos nasais com base em uma busca feita nos bancos de dados PubMed/Medline e Periódicos CAPES de todos os artigos publicados entre janeiro de 2005 e janeiro de 2015. A busca foi direcionada à estudos contendo os termos polimorfismos, rinossinusite e pólipos.
Resultados: Dois estudos encontraram uma associação entre os polimorfismos MMP-9 e MMP-2 e rinossinusite crônica com pólipos nasais, mas não em pacientes com pólipos nasais recorrentes. Outros estudos encontraram uma associação de pólipos nasais com polimorfismos MMP-9, mas não com MMP-2. Existem evidências de uma associação dos polimorfismos LTC4S, NOS2A, PTGDR, MET, COX-2, OSF-2 e LF e o risco de desenvolver pólipos nasais, especialmente quando combinados com rinite alérgica crônica e asma.
Conclusão: Estudos genéticos sobre rinossinusite crônica com pólipos nasais são promissores e podem oferecer conhecimento sobre sua fisiopatologia, que é provavelmente afetada por múltiplos fatores genéticos.

Introduction

The last European Position Paper on Rhinosinusitis and Nasal Polyps (EPOS2012) defined chronic rhinosinusitis as inflammation of the nose and the paranasal sinuses ≥12 weeks that is characterized by two or more symptoms, one of which should be either nasal blockage/congestion/obstruction or nasal discharge (anterior/posterior nasal drip) associated with facial pain/pressure or reduction/loss of smell. In children, cough should be included as a symptom. Additional symptoms include endoscopic signs of Nasal Polyps (NP), and/or mucopurulent discharge primarily from middle meatus, and/or edema/mucosal obstruction in middle meatus. Computed Tomography (CT) changes include mucosal changes within the ostiomeatal complex and or sinuses.[1]

According to a study performed within the Global Allergy and Asthma European Network (GA²LEN), the overall prevalence of Chronic Rhinosinusitis (CRS) in Europe was 10.9%.[2] In São Paulo, Brazil, Pilan et al. (2012) found a prevalence of 5.51%.[3] Additionally, it was estimated that CRS affects 13% of the total population in the United States.[4] These figures are within the estimated global prevalence of the condition, which affects 5%–15% of the general population.[1]

The socioeconomic burden of CRS is substantial and includes not only medical costs (doctor's visits, exams, medication), but also costs to the society and economy, including high morbidity, work absenteeism, and poor academic performance (Fig. 1). Q3

Based on endoscopy findings, CRS can be categorized into chronic rhinosinusitis with (CRSwNP) or without (CRSsNP) nasal polyps. CRSwNP is frequently associated with reduction/loss of smell, whereas facial pain/pressure is the main symptom in CRSsNP.[5]