Nasal Polyps: Pathogenesis and Treatment Implications

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KEYWORDS

• Sinusitis • Asthma • Unified airway
• Allergy • Rhinosinusitis • Polyp

Key Points: Nasal Polyps: Pathogenesis and Treatment Implications

- Nasal polyp (NP) is the end product of chronic rhinosinusitis (CRS).
- NPs are created through multiple inflammatory or infectious pathways.
- All types of CRS have the potential to develop NPs, given enough time and insult.
- Medical treatment depends on the pathogenesis of NPs.
- Surgical removal of inflammatory cell and mediators followed by medical treatment is likely to have the best success in patients with severe nasal polyposis.
- Evaluation of allergy, whether it is negative or positive, is important in the management of patients with nasal polyposis.

NPs represent a common clinical end point for a myriad of inflammatory disease processes involving the paranasal sinuses. NP is common, with 1% to 4% of the general population having evidence of an NP on autopsy.[1] However, not everyone with NP develops clinical symptoms because only a portion of population becomes symptomatic, with a yearly incidence of 0.627 per 1000 people.[1] Men seem to outnumber women (2:1), with the overall incidence increasing in both sexes with age. Even though these numbers of individuals with NP are small compared with that of other more common chronic illnesses, such as hypertension, the overall effect of NP should not be underestimated. In fact, NPs have been shown to have a significant detrimental effect on the quality of life, which is similar in severity to chronic obstructive pulmonary disease.[2]

The authors have nothing to declare.
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CLINICAL PRESENTATION AND DIAGNOSIS

When discussing trends in clinical presentation, the diversity of patients with NPs must always be respected, and broad generalizations should be avoided. Nevertheless, trends in clinical complaints have been shown when comparing patients with CRS with polyps with those without evidence of polyps. Patients with NPs are more likely to complain of a constellation of symptoms, including diminished olfaction, headache, and postnasal drip.[3] In addition, symptoms are more likely to be described as bilateral in 80% to 90% of patients.[4] Although a thorough clinical history taking is invaluable, the gold standard for diagnosis of NPs remains endoscopy.[5] In an effort to quantify endoscopic findings, multiple staging systems have been proposed. The utility of these systems lie primarily in their ability to allow for preinterventional and postinterventional comparison. Lund and Mackay[6] used a 3-tier system with scoring as follows: 0, no polyps; 1, confined to middle meatus; and 2, beyond middle meatus. Lildholdt and colleagues[7] used a slightly varied system to assess the effect of multiple treatment methods. The 4-point system developed used the upper and lower edges of the inferior turbinate as a landmark to describe polyp extension. The highest score available extended to the inferior edge of the inferior turbinate, essentially contacting the floor and filling the nasal cavity. To assess these systems and several new methods, Johansson and colleagues[5] evaluated interobserver and intraobserver variability in a well-designed clinical study. The Lildholdt system was found to provide good repeatability and less interexaminer variability in comparison with the Lund-Mackay scoring system. Of note, researchers have shown poor reliability or correlation between patients' recorded visual analog scores for nasal obstruction and the objective polyp burden regardless of the scoring system. Although objective measures are needed for treatment studies, this lack of correlation with symptoms highlights the weakness of using staging systems in clinical practice.

IMAGING FOR NASAL POLYPS

It is undeniable that computed tomographic (CT) imaging has become an essential tool for the diagnosis and surgical management of sinusitis. Classically, CT scans of sinuses in patients with NP are described as possessing polypoid masses associated with partial or complete opacification of paranasal sinuses with infundibulum widening.[8] With respect to its use as a diagnostic tool, CT imaging's major weakness lies in its inability to differentiate polyps from mucous and other soft tissue masses. However, many patients with CRS eventually require operative intervention, and therefore, a major benefit of CT imaging remains in its ability to provide a road map for surgical planning. For patients with nasal polyposis, this information can be invaluable because the deforming nature of the disease can lead to intraoperative disorientation, making knowledge of anatomic variations crucial.

CHRONIC RHINOSINUSITIS AND NASAL POLYP

The largest proportion of patients with NP has a diagnosis of CRS. CRS affects about 30 million Americans, imparting an annual medical cost of $2.4 billion. Societal effects are further compounded by sick days, lost work hours, and other indirect costs.[9] To standardize a formerly amorphous clinical diagnosis, CRS criteria have been set forth. A diagnosis of CRS requires a symptom duration longer than 12 weeks with 2 of the following symptoms: facial pain/pressure, hyposmia/anosmia, nasal obstruction, or anterior/posterior nasal drip.[10] Even though all types of CRS have the potential to develop NPs, given enough time and insult, the presence of NPs has been used as