CLINICAL COURSE OF POLYPOUS RHINOSINUSITIS: CLINICAL ANALYSIS BASED ON INTERNATIONAL CLASSIFICATIONS

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Abstract

Chronic rhinosinusitis with nasal polyps (CRSwNP) is a complex, relapsing inflammatory condition of the upper airways, substantially affecting patients' quality of life and respiratory function. This study presents a clinical analysis of 120 adult patients diagnosed with CRSwNP according to the EPOS 2020 criteria. We explore demographic characteristics, symptom profiles, endoscopic and imaging findings, laboratory biomarkers, and treatment outcomes over a 12-month follow-up period. Emphasis is placed on differentiating disease endotypes and phenotypes to better predict recurrence and response to therapy, including systemic corticosteroids and biologics. Our findings support the importance of precision medicine approaches in managing this heterogeneous disease.

Keywords: CRSwNP, nasal polyps, type 2 inflammation, biologic therapy, EPOS 2020, eosinophilic rhinosinusitis, endotyping

Introduction

Chronic rhinosinusitis with nasal polyps (CRSwNP) is a significant subtype of chronic rhinosinusitis (CRS), characterized by persistent inflammation of the sinonasal mucosa and the presence of bilateral nasal polyps. Affecting approximately 1–4% of the adult population worldwide, CRSwNP is associated with marked impairment in quality of life, sleep, olfaction, and general well-being [1].

The European Position Paper on Rhinosinusitis and Nasal Polyps 2020 (EPOS 2020) emphasizes the role of underlying inflammatory mechanisms, classifying CRS into phenotypes (observable features) and endotypes (molecular pathways), with CRSwNP commonly linked to a type 2 immune response [2]. This subtype is typically characterized by eosinophilic inflammation, elevated interleukins (IL-4, IL-5, IL-13), and high serum IgE levels, particularly in patients with comorbid asthma or NSAID-exacerbated respiratory disease (N-ERD) [3].

Despite the availability of medical and surgical interventions, CRSwNP frequently recurs, with relapse rates of up to 60–70% within a few years following endoscopic sinus surgery (ESS) [4]. The recent introduction of biologic therapies targeting type 2 inflammatory pathways represents a shift in disease management, but their optimal use requires accurate patient stratification.

Epidemiology and Classification

CRSwNP typically emerges in the third to fifth decades of life, with a male-to-female ratio of approximately 2:1. It is more prevalent in patients with asthma (up to 60%) and in those with N-ERD (15–25%) [5]. The disease is chronic by nature, with symptoms persisting for more than 12 weeks and often extending over several years.

Classification frameworks include:

- **EPOS 2020**: divides CRS into CRSwNP and CRS without nasal polyps (CRSsNP), and further stratifies based on underlying inflammation.
- **ICAR-RS** (International Consensus Statement on Allergy and Rhinology – Rhinosinusitis): emphasizes integration of clinical, radiologic, and endoscopic findings.
- **Endotyping**: Eosinophilic vs. neutrophilic vs. mixed-type inflammation.

In our study, we used EPOS 2020 guidelines to confirm CRSwNP diagnosis and differentiate type 2 (eosinophilic) and non-type 2 (neutrophilic or mixed) inflammation, incorporating endoscopic scores, histology, and biomarkers.

Materials and Methods

Study Population

The study included 120 adult patients (aged 21–65 years) diagnosed with bilateral CRSwNP at a tertiary care center between January 2023 and January 2024. Inclusion criteria were based on EPOS 2020: presence of nasal obstruction, discharge, hyposmia, and endoscopically confirmed bilateral polyps lasting ≥12 weeks. Exclusion criteria: unilateral nasal polyps, cystic fibrosis, immunodeficiency, or history of sinonasal tumors.

Parameters Evaluated

- **Demographics**: age, sex, smoking status
- **Comorbidities**: asthma, N-ERD
- **Symptoms**: severity of obstruction, anosmia, facial pressure (scored on VAS)
- **Endoscopy**: Lund-Kennedy score (0–12)
- **Imaging**: CT scan, Lund-Mackay score (0–24)
- **Biomarkers**: blood eosinophil count, total serum IgE
- **Histology**: inflammatory cell type in polyp tissue
- **Treatment**: INCS, short-term oral corticosteroids, ESS, biologics (dupilumab in 28 patients)

Patients were followed over 12 months post-treatment. Symptom recurrence, need for revision surgery, and response to biologics were recorded.

Results

1. Demographic and Clinical Characteristics

Out of 120 patients:

- **Mean age**: 46.2 ± 10.1 years
- **Male:female ratio**: 1.8:1
- **Comorbid asthma**: 72 patients (60%)
- **N-ERD**: 20 patients (16.7%)
- **Active smokers**: 18 patients (15%)

Table 1. Clinical Profile of Patients with CRSwNP

Parameter	Value (n=120)
Mean age (years)	46.2 ± 10.1
Male sex	78 (65%)
Comorbid asthma	72 (60%)
N-ERD	20 (16.7%)
Elevated eosinophils (>0.3 × 10^9/L)	88 (73%)
Elevated IgE (>100 IU/mL)	76 (63%)
Type 2 inflammation (histologically confirmed)	83 (69%)

2. Symptom Severity and Endoscopy Scores

- **Nasal obstruction**: reported as severe (VAS > 7) in 85% of patients
- **Olfactory loss (anosmia)**: reported in 92 patients (76.7%)
- **Mean Lund-Kennedy endoscopy score**: 6.8 ± 1.9
- **Mean Lund-Mackay CT score**: 17.3 ± 3.2

3. Treatment Modalities and Outcomes

Conventional Treatment (All Patients)

- **Intranasal corticosteroids (INCS)**: all 120 patients
- **Systemic corticosteroids** (short-term): 102 patients (85%)
  - Mean improvement in symptoms: 2.4 points on VAS
  - Duration of effect: ~6–8 weeks

Endoscopic Sinus Surgery (ESS)

- Performed in 76 patients (63%)
- Mean time to symptom recurrence: **9.5 months**
- Revision surgery required in 22 patients (29% of ESS group)

Biologic Therapy

- Administered to 28 patients with uncontrolled, type 2 CRSwNP
- Mean baseline eosinophils: 0.59 × 10^9/L
- Mean reduction in polyp score: 58% by week 24
- Significant improvements in smell, congestion, and quality of life (SNOT-22)

Discussion

The clinical course of CRSwNP in this cohort confirms the chronic, relapsing nature of the disease, with a strong association with **type 2 inflammation**, asthma, and N-ERD. The majority of patients (69%) exhibited eosinophilic endotype, in line with global data suggesting a high prevalence of type 2 CRSwNP in Western and Middle Eastern populations [6].

Predictors of Recurrence

Patients with:

- **Asthma**
- **Elevated eosinophils**
- **Higher initial polyp score**

were significantly more likely to experience early recurrence following ESS, indicating the need for adjunctive or alternative treatment strategies.

Efficacy of Biologics

Our analysis supports existing evidence that **dupilumab** is highly effective in reducing symptom burden and polyp size in patients with type 2 inflammation. These patients also had improved olfaction and quality of life, reinforcing the EPOS 2020 recommendation of biologics for severe, recurrent CRSwNP not controlled with corticosteroids and surgery [2, 7].

Conclusion

This clinical study reinforces the importance of endotype-based diagnosis and treatment in CRSwNP. While conventional therapy and surgery remain cornerstones of management, a substantial subset of patients—particularly those with type 2 inflammation—benefit from targeted biologic therapies.

The use of international classification systems such as **EPOS 2020**, combined with objective biomarkers (eosinophils, IgE) and imaging, enables a **personalized medicine approach**, reducing the likelihood of recurrence and improving long-term outcomes.

References

1. Bachert C, Marple B, Schlosser RJ, et al. Adult chronic rhinosinusitis. Nat Rev Dis Primers. 2020.
2. Fokkens WJ, Lund VJ, Hopkins C, et al. EPOS 2020: European Position Paper on Rhinosinusitis and Nasal Polyps. Rhinology. 2020.
3. Stevens WW, Lee RJ, Schleimer RP, Cohen NA. Chronic rhinosinusitis pathogenesis. J Allergy Clin Immunol. 2015.
4. DeConde AS, Mace JC, Alt JA, et al. Predictors of revision sinus surgery. Int Forum Allergy Rhinol. 2017.
5. Laidlaw TM, Mullol J, Woessner KM, Amin N, Mannent LP. Biologics for nasal polyps. J Allergy Clin Immunol Pract. 2021.
6. Tomassen P, Vandeplas G, Van Zele T, et al. Inflammatory endotypes of CRSwNP. J Allergy Clin Immunol. 2016.
7. Han JK, Bachert C, Fokkens WJ, et al. Dupilumab in nasal polyposis. Lancet. 2019.