



The role of intranasal corticosteroids in the treatment of chronic rhinosinusitis

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Abstract:

Topical intranasal corticosteroids (INCS) are used to control disease symptoms in patients with chronic rhinosinusitis with nasal polyposis (CRSwNP). Intranasal corticosteroids are the first-line treatment for CRSwNP and they are important in the postoperative care of patients undergoing FESS postoperatively. Oral corticosteroid therapy is reserved for patients with severe symptoms. Endoscopic sinus surgery is indicated for patients with inadequate improvement despite medical therapy.

Key words: intranasal corticosteroids, chronic rhinosinusitis with nasal polyposis, rhinology

Introduction

Chronic rhinosinusitis with nasal polyposis (CRSwNP) is a chronic inflammatory condition of unknown etiology present in 2% to 5% of the adult general population² and is often associated with asthma and other respiratory diseases^{3, 4}.

The European Position Paper on Rhinosinusitis and Nasal Polyps (EPOS) consensus defines chronic rhinosinusitis with nasal polyps (CRSwNP) as the presence of two or more nasal symptoms, one of which should be either nasal blockage or nasal discharge, and/or the reduction/loss of smell, and/or facial pain for more than 12 weeks, and/or the presence of nasal polyps by nasal endoscopy or mucosal changes within the ostiomeatal complex, and/or paranasal sinuses by computed tomography (CT) scan¹. Similarly, the diagnosis according to the American Academy of Otolaryngology–Head and Neck Surgery depends on the presence of two or more of four symptoms, including nasal blockage, nasal/postnasal discharge, facial pain, and smell loss, with documented inflammation by endoscopic and/or radiological findings⁵. Smell loss is one of the most frequent complaints in patients with NP and it may be due to either mucosal obstruction or inflammation of the olfactory cleft^{1, 5-9}.

Why we have to use INCS in Rhinology Practice?

Patients with CRSwNP experience improved symptoms and other patient – reported outcomes when treated with

INCS¹³. INCS improve nasal fuction and are generally safe¹⁸. Many studies demonstrated significant benefits for symptoms, polyp size, polyp recurrence and nasal expiratory peak flow rate with INCS³. They show improve patency of the osteomeatal complex – reduction in mucosal swelling¹⁵. INCS inhibit both immediate and late phase reactions to antigenic stimulation (after 7 days of treatment). We have to know their common side effects: nasal irritation, mucosal bleeding and crusting^{3, 7, 16}.

Marcela Fandino et al.⁷ reported the use of postoperative topical corticosteroids in cronic rhinosinusitis with nasal polyps: a systemic review and meta analysis. They concluded, that INCS use is a safe therapy in postoperative management of CRSwNP patients. INCS showed significant improvement in polyp score, patients' symptoms and significant decrease in polyp recurrence in the first year postoperatively. The authors suggested: patients to treat with INCS (fluticasone furoate; fluticasone propionate; mometasone furoate) once daily for a minimum of 6-8 weeks continuously. Standart dose was classified as 200-800 µg/day. *Clinical efficacy is similar for all INCS*. The effects of INCS on hypothalamic-pituitary-adrenal axis suppression are minimal at 800 µg/day in adults and 400 µg/day in children. INCS, given in recommended dosages are not expected to cause major systematic adverse effects.

Interdependence between Chronic rhinosinusitis with nasal polyps and Bronchial asthma

CRS is a heterogeneous disorder and may be associated with NP (CRSwNP) or not (CRSsNP). Both forms are considered distinct entities with a different pathophysiology and specific inflammatory cells.

CRSwNP is characterized by eosinophilic inflammation influenced by helper T-cell type 2 (Th2), cytokines, down regulation of regulatory T-cells and decreased transforming growth factor-β (TGF-β) expression in the paranasal mucosa^{11, 20}.

Corticosteroids constitute the first-line medical treatment for CRSwNP. They are administered topically or systematically and topical treatment should be prolonged owing to the chronic nature of disease^{10, 12, 17}.

CRS has been associated with lower airway disease, particularly asthma, which may reflect increased asthma severity. Nasal polyposis as a comorbid condition with asthma. X-rays of paranasal sinuses are abnormal in 31% to 75% of children and adults with asthma, compared with 15% to 26% of normal, asymptomatic individuals and mucosal thickening can be visualized by CT scans in 74% of asthmatic patients^{19, 20}. 30% to 50% of patients with CRS may suffer from bronchial asthma (Tabl. 1).

Tabl. 1

Differential Characteristics of CRS in association with Asthma	CRSwNP	CRSsNP
Association with Asthma	Strong	Medium/weak
Symptoms	Nasal obstruction	Headache
Histopathology	Eosinophilia	Mononuclear cells, Neutrophils
T cell	Th2	Th1
Cytokines increased in sinus mucosa	IL4, IL5, IL25, IL33, CCL18, eotaxin 3	IFNγ, IL32, TGFβ
Remodeling with collagen formation	Absent	Present

The possible mechanisms linking CRSwNP and Bronchial asthma are: neurogenic reflex; loss of the protective function of the nose (mouth breathing); aspiration of nasal secretions into the lower airway; common triggers operating in the background of an impaired innate immune response: infections

agents (fungal, bacterial, viral), allergens, other environmental factors (tobacco smoke e.g.); activation of systemic inflammation and involvement of bone-marrow derived inflammatory cells particularly eosinophils²⁰.



Conclusion

The treatment of CRSwNP with INCS is effective in decreasing the size of sinonasal polyps, nasal obstruction and they are suppressing the episodes of

bronchial asthma too. The bulgarian otorhinolaryngologists have to follow the EPOS guidelines and EAACI recommendations¹ in their practice.

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