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ROLE OF CORTICOSTEROIDS IN THE POSTOPERATIVE MANAGEMENT OF ALLERGIC FUNGAL RHINOSINUSITIS

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ABSTRACT

Background: Allergic fungal rhinosinusitis (AFRS) is a non-invasive form of fungal rhinosinusitis characterized by type I hypersensitivity reaction to fungal antigens, eosinophilic mucin, and a high rate of recurrence. Corticosteroids form the cornerstone of medical management by suppressing inflammation and preventing recurrence. To evaluate the role of corticosteroids in the management of AFRS with respect to symptom control, disease recurrence, and postoperative outcomes. **Materials And Methods:** This study includes 30 patients diagnosed with AFRS based on Bent and Kuhn criteria. All patients underwent functional endoscopic sinus surgery (FESS) followed by corticosteroid therapy. The outcomes assessed included symptom improvement, endoscopic scores, radiological findings, and recurrence rates over a follow-up of 3 months. **Results:** Patients receiving postoperative corticosteroids showed significant improvement in nasal obstruction, nasal discharge, and facial pain. Endoscopic scores demonstrated reduced mucosal edema and polyposis. Recurrence was significantly lower in patients with long-term topical corticosteroid therapy. **Conclusion:** Corticosteroids play a pivotal role in the management of AFRS by reducing inflammation, controlling symptoms, and decreasing recurrence rates. Long-term topical corticosteroids, with judicious use of systemic steroids, remain the mainstay of postoperative therapy.

KEYWORDS

Allergic fungal rhinosinusitis, corticosteroids, functional endoscopic sinus surgery, nasal polyposis.

INTRODUCTION

Allergic fungal rhinosinusitis (AFRS) is a distinct clinical entity within the spectrum of chronic rhinosinusitis, first described by Millar et al. and later characterized by Bent and Kuhn. It predominantly affects immunocompetent individuals and is commonly seen in warm and humid climates.

AFRS is mediated by a type I hypersensitivity reaction to fungal elements present in the sinonasal cavities, leading to the formation of allergic mucin rich in eosinophils. The disease is notorious for its recurrent nature and extensive sinus involvement, often presenting with nasal polyposis, facial deformity, and radiological evidence of sinus expansion.

Surgery alone is insufficient due to the underlying immunological pathology. Corticosteroids, owing to their potent anti-inflammatory and immunosuppressive properties, play a central role in both preoperative and postoperative management.

AIM

To study the role of corticosteroids in symptom control post operatively in patients with AFRS

OBJECTIVES

1. To assess clinical, endoscopic and radiological findings in patients with AFRS.
2. To assess the impact of corticosteroid therapy on postoperative disease recurrence

MATERIALS AND METHODS

Study Design

Prospective observational study

Study Period

12 months including 3months follow up

Study Population

30 Patients attending the ENT outpatient department diagnosed with allergic fungal rhinosinusitis after obtaining written informed consent were involved in the study.

Inclusion Criteria

* Patients fulfilling Bent and Kuhn diagnostic criteria for AFRS
* Age > 18 years
* Willingness to participate and comply with follow-up

Exclusion Criteria

* Invasive fungal sinusitis
* Immunocompromised patients
* Previous sinonasal malignancy

Diagnostic Criteria (Bent and Kuhn)

MAJOR CRITERIA(5)	MINOR CRITERIA(6)
Type I hypersensitivity	Asthma
Nasal polyposis	Unilateral disease
Characteristic CT findings	Bone erosion
Eosinophilic mucin without invasion	Fungal culture
Positive fungal staining	Charcot-Leyden crystals
	Serum eosinophilia

Treatment Protocol

All patients underwent functional endoscopic sinus surgery (FESS)
Post operatively all patients were prescribed:

- Systemic corticosteroids: Oral prednisolone 0.5 mg/kg/day tapered over 2–3 weeks
- Topical corticosteroids: Intranasal steroid sprays and nasal douching postoperatively for 3months

Outcome Measures

- Symptom score (nasal obstruction, discharge, facial pain)
- Diagnostic nasal endoscopy findings
- Radiological assessment
- Recurrence during follow-up

RESULTS

A total of 30 patients diagnosed with allergic fungal rhinosinusitis (AFRS) based on Bent and Kuhn criteria were included in the study.

Demographic Profile: The age of patients ranged from 18 to 65 years, with a mean age of 31.8 ± 9.4 years. The majority of patients were in the third and fourth decades of life. There were 17 males (56.7%) and 13 females (43.3%), with a male-to-female ratio of 1.3:1.

Clinical Presentation: The most common presenting symptom was nasal obstruction, reported by 28 patients (93.3%), nasal discharge in 26 patients (86.7%), facial pain in 21 patients (70%), and hyposmia/anosmia in 19 patients (63.3%). A history of atopy was present in 20 patients (66.7%), while bronchial asthma was associated

in 11 patients (36.7%).

Endoscopic Findings: On diagnostic nasal endoscopy, bilateral nasal polyposis was observed in 23 patients (76.7%), while unilateral nasal polyposis was seen in 7 patients (23.3%). Thick allergic mucin was identified in 25 patients (83.3%), and inferior turbinate hypertrophy was noted in 14 patients (46.7%).

Radiological Findings: The maxillary and ethmoid sinuses were the most commonly involved. Computed tomography (CT) of the paranasal sinuses revealed: Heterogeneous hyperdense sinus contents in 26 patients (86.7%)**,** multiple sinus involvement in 27 patients (90%)**,** sinus expansion with bony remodeling in 10 patients (33.3%)**,** bone erosion in 5 patients (16.7%)

Treatment: All patients underwent functional endoscopic sinus surgery (FESS) followed by postoperative corticosteroid therapy. Symptom severity was assessed using a visual analog scale (VAS).

Table 1: Comparison Of Mean Symptom Scores (VAS)

Symptom	Pre-treatment Mean ± SD	Post-treatment Mean ± SD (6 months)	p-value
Nasal obstruction	8.1 ± 1.0	2.2 ± 0.8	<0.001
Nasal discharge	7.5 ± 1.2	2.4 ± 0.9	<0.001
Facial pain	6.7 ± 1.4	2.0 ± 0.7	<0.001
Hyposmia	6.3 ± 1.5	2.6 ± 1.1	<0.001

A statistically significant improvement was observed in all symptoms following corticosteroid therapy.

Follow-up: all the patients underwent postop endoscopic evaluation at the end of 3 months: Healthy mucosa with patent sinus ostia was observed in 25 patients (73.3%) and mild mucosal edema was seen in 5 patients (16.7%)

Recurrence Rates: Disease recurrence was observed in 5 patients (16.7%) during the follow-up period. Recurrence among compliant patients with topical corticosteroids was 2 patients (8%) and among non-compliant patients was 3 patients (30%).

DISCUSSION

Allergic fungal rhinosinusitis (AFRS) is a distinct, non-invasive form of chronic rhinosinusitis characterized by an exaggerated immunological response to fungal antigens. The present study evaluated the clinical profile, radiological and endoscopic findings, treatment outcomes, and recurrence rates in patients with AFRS managed by functional endoscopic sinus surgery (FESS) followed by postoperative corticosteroid therapy.

In the present study, AFRS predominantly affected young adults, with a mean age of 31.8 ± 9.4 years, and most patients were in the third and fourth decades of life. This finding is consistent with previous studies by Bent and Kuhn and Schubert, which reported AFRS to be more common in young, immunocompetent individuals. A male predominance observed in this study is also comparable with earlier reports, although some studies have shown a relatively equal gender distribution.

Nasal obstruction was the most common presenting symptom, followed by nasal discharge, facial pain, and hyposmia, reflecting the typical symptomatology of AFRS. The high prevalence of atopy (66.7%) and associated bronchial asthma (36.7%) in our cohort supports the concept that AFRS is part of a systemic allergic diathesis. Similar associations have been documented by Schubert and Goetz, emphasizing the role of IgE-mediated hypersensitivity in disease pathogenesis.

Diagnostic nasal endoscopy revealed a high incidence of nasal polyposis (100%), with bilateral involvement in the majority of patients. Thick allergic mucin, a hallmark of AFRS, was identified in 83.3% of cases, consistent with reports by Manning and Holman. These findings further reinforce the diagnostic value of endoscopy in AFRS.

Radiologically, CT scans of the paranasal sinuses demonstrated characteristic features such as heterogeneous hyperdense sinus contents and multi-sinus involvement, most commonly affecting the maxillary and ethmoid sinuses. Sinus expansion with bony remodeling and bone erosion were observed in a subset of patients, findings that have been well described in the literature and are considered highly suggestive of AFRS. These radiological features help differentiate AFRS from other forms of chronic rhinosinusitis.

All patients in the present study were treated with FESS followed by postoperative corticosteroid therapy, which remains the cornerstone of AFRS management. A statistically significant improvement was observed in all symptom scores at 3 months post-treatment, as assessed by the visual analog scale. This significant reduction in symptom severity highlights the effectiveness of combined surgical and medical management. Similar outcomes have been reported by Kupferberg et al. and Rupa et al., who emphasized the importance of meticulous surgical clearance of allergic mucin and long-term steroid therapy.

Postoperative endoscopic evaluation at 3 months showed healthy mucosa with patent sinus ostia in the majority of patients, indicating good surgical outcomes and adequate disease control. However, mild mucosal edema persisted in a small proportion of patients, underscoring the chronic inflammatory nature of AFRS.

The overall recurrence rate in the present study was 16.7%, which is comparable to recurrence rates reported in previous studies. Notably, recurrence was significantly higher among patients non-compliant with topical corticosteroid therapy, highlighting the critical role of postoperative medical management and long-term follow-up. This finding aligns with the observations of Schubert, who stressed that AFRS is a chronic condition requiring sustained postoperative therapy to prevent recurrence.

SUMMARY

AFRS predominantly affected young adults with male predominance. Corticosteroid therapy significantly improved symptoms and endoscopic findings & long-term topical corticosteroid use was associated with reduced recurrence rates.

Postoperative corticosteroid therapy resulted in Significant reduction in nasal obstruction and discharge with marked improvement in endoscopic appearance of mucosa & reduced incidence of polyp recurrence.

Patients compliant with long-term topical corticosteroid therapy demonstrated better disease control compared to those with irregular usage. Recurrence was higher in patients who discontinued steroids prematurely.

CONCLUSION

Corticosteroids are indispensable in the management of allergic fungal rhinosinusitis. A combined approach of surgical clearance followed by judicious use of systemic corticosteroids and long-term topical corticosteroid therapy provides optimal disease control and minimizes recurrence.

Limitations Of The Study

* Small sample size
* Short follow-up period
* Lack of comparison group

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