e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2024; 16(5); 385-387

Original Research Article

A Study to Evaluate the Various Factors Contributing to Failure of Medical Management in Patients with Chronic Rhinosinusitis

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Received: 14-03-2024 / Revised: 12-04-2024 / Accepted: 26-05-2024
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Conflict of interest: Nil

Abstract

Aim: The aim of the present study was to identify various factors contributing to failure of medical management in patients with chronic rhinosinusitis.

Methods: This was a Prospective observational study with sample size of 50 conducted in the Department of ENT, Nalanda medical college and Hospital, Patna, Bihar, India. Patients above the age of 15 years and below the age of 65years, with regular follow up and not on any steroids for last one month were included in to this study.

Results: Diagnostic Nasal endoscopy revealed that DNS was the most common finding in both groups with highest incidence in group B, followed by Mucin and Middle turbinate hypertrophy. Among these, Deviated nasal septum and Mucin were high in non-responders comparatively and is significant statistically. Non Contrast Computed tomography of nose and paranasal sinuses showed statistically significant result ($p<0.05$).In our study, Fungus was seen more in group B but was statistically insignificant. Immunocompromised status was more in group B which was statistically significant ($p <0.05$).

Conclusion: The study emphasized that presence of Deviated nasal septum, Mucin, Aspergillus niger and compromised immune status contributed for failure of medical management in chronic rhinosinusitis.

Keywords: Chronic rhinosinusitis, Deviated nasal septum(DNS) , Osteomatal complex , Mucin ,Fungi , Immune status

Introduction

Rhinosinusitis is a relatively common disease affecting approximately 13% of the US population and costing healthcare systems more than $8.6 billion annually. [1,2] Treatment usually commences with medical management, including nasal saline irrigations, topical nasal steroids, oral antibiotics, and possibly oral steroids. [3] However, medical management often times fails to significantly relieve the patient's symptoms, and, for these patients, surgical intervention may be considered to be a logical next step in their treatment algorithm. Surgical management of rhinosinusitis is typically reserved for two main subcategories: chronic rhinosinusitis (CRS) and recurrent acute rhinosinusitis (RARS).

CRS is defined by the American Academy of Otolaryngology – Head and Neck Surgery as 12 weeks, or longer, of two of a defined group of symptoms/signs: mucopurulent drainage, nasal congestion, facial pressure/pain, or decreased sense of smell AND inflammation documented by one of the following: purulent mucus on endoscopy, polyps in the nasal cavity, or radiographic imaging showing inflammation. [3] Alternatively, RARS is diagnosed when four or more episodes of acute bacterial rhinosinusitis (<4 weeks in duration) occur in a period of 12 months without signs of rhinosinusitis between episodes [3]. Over the past few decades, surgical intervention for these disease states has been extensively evaluated in its ability to achieve "successful outcomes" measured by endoscopic improvement, symptom reduction, and quality of life changes. [4-10] Additionally, Smith et al. showed that in patients who failed medical management, subsequent sinus surgery resulted in less antibiotic use, less steroid use, significant improvement in quality of life, and fewer missed days of work/school compared to continued medical management. [4] Therefore, this review will focus on the various factors which must be considered in order to optimize surgical results, including patient selection, perioperative medical management.

The aim of the present study was to identify various factors contributing to failure of medical management in patients with chronic rhinosinusitis.

Materials and Methods

This was a Prospective observational study with sample size of 50 conducted in the Department of ENT, Nalanda medical college and Hospital, Patna, Bihar, India. Patients above the age of 15 years and below the age of 65years, with regular follow up and not on any steroids for last one month were included in to this study. Patients with complicated chronic rhinosinusitis, who have undergone paranasal sinus surgery previously, history of hypersensitivity to pencillin, presence of nasal polyposis and infection from surrounding areas were excluded from the study. All the patients were included into the study after taking proper informed consent. After taking detailed history from the patient and complete clinical examination, all patients underwent Diagnostic nasal endoscopy and Non contrast computered tomography of nose and paranasal sinuses. During Diagnostic nasal endoscopy swab and nasal washings were collected for microbiological assessment for presence and type of fungus. Standard medical treatment with Antibiotic (Amoxicillin + Clavulanic acid), antihistaminics, Saline nasal spray and Steroid nasal spray were given to all the patients for 2 weeks. Depending upon the response to treatment, patients were divided into two groups. Group A included patients with good response to medical management and Group B included patients with poor response to medical management. The data between two groups were compared using Mann Whitney test and significance was ascertained using p value.

Results

Table 1: Comparison of nasal endoscopic findings

DNE findings	GroupA(25)	GroupB(25)	Total(50)	Pvalue
DNS	7	8	15	(p<0.05)
Mucin	5	7	12	(p<0.05)
Middleturbinatehypertrophy	8	6	14	(p>0.05)
Inferiorturbinatehypertrophy	5	4	9	(p>0.05)

Diagnostic Nasal endoscopy revealed that DNS was the most common finding in both groups with highest incidence in group B, followed by Mucin and Middle turbinate hypertrophy. Among these, Deviated nasal septum and Mucin were high in non-responders comparatively and is significant statistically.

Table 2: Comparison of radiological findings

Radiological findings	GroupA(25)	GroupB(25)	Total(50)	Pvalue
DNS	7	8	15	(p<0.05)
conchabullosa	8	7	15	(p>0.05)
Haller cell	2	2	4	(p>0.05)
OM blockage	8	8	16	

Non Contrast Computed tomography of nose and paranasal sinuses showed statistically significant result (p<0.05).

Table 3: Division of patients according to contributing factors

Contributing factors		GroupA n=25	GroupB n=25	TOTALNOOFPATIENTS n=50	Pvalue
Anatomical factors	single	15	8	23	P<0.05
	multiple	10	17	27	
Fungal organisms	present	12	17	29	P>0.05
	absent	13	8	21	
Immune status	competent	17	10	27	P<0.005
	supressed	8	15	23	

In our study, Fungus was seen more in group B but was statistically insignificant. Immunocompromised status was more in group B which was statistically significant (p <0.05).

Discussion

Chronic rhinosinusitis is one of the common diseases encountered in ENT practice causing significant morbidity to the patients. It affects approximately 20% of the population and has significant impact on quality of life of these individuals. [11] Rhinosinusitis is defined as an inflammation of the mucous membrane that lines nose and paranasal sinuses and is defined as chronic rhinosinusitis, when the signs and symptoms last for more than 12 weeks. [12]

Diagnostic Nasal endoscopy revealed that DNS was the most common finding in both groups with highest incidence in group B, followed by Mucin and Middle turbinate hypertrophy. Among these, Deviated nasal septum and Mucin were high in non-responders comparatively and is significant statistically. Vinnakota Sriprakash [13] in his study found the incidence of DNS to be 30.9% in non-CRS patients, which clearly indicates that DNS is seen more in patients with CRS than in normal population. Hence possibly, DNS is a contributing factor for failure of medical management in all the above studies including our study.

Non Contrast Computed tomography of nose and paranasal sinuses showed statistically significant result ($p<0.05$). In our study, Fungus was seen more in group B but was statistically insignificant. Immunocompromised status was more in group B which was statistically significant ($p <0.05$). In a Maharashtra study [14], the prevalence was found to be 26.7% and Lakshmanan et al [15] in Europe, found that 75.5% of their specimens were positive for fungal elements. Fungus was detected more in group B which was not statistically significant, though numerically more. On analyzing the type of fungus, it was observed that there was difference in the type of fungus present in both the groups.

Conclusion

The study emphasized that presence of Deviated nasal septum, Mucin, Aspergillus niger and compromissed immune status contributed for failure of medical management in chronic rhinosinusitis.

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