

Original Research Article

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Chronic rhinosinusitis: medical versus surgical management

Seema Patel, Tanvi S. Rekhade, Rameshwar T. Pawar*, Ashok Z. Nitnaware

Department of ENT, Government Medical College, Nagpur, Maharashtra, India

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***Correspondence:**

Dr. Rameshwar T. Pawar,

E-mail: ram.pawar10@gmail.com

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ABSTRACT

Background: Management protocols of chronic rhinosinusitis (CRS) recommend initial treatment with maximal medical therapy with surgery reserved for refractory cases. Literature comparing the effectiveness of these two treatment modalities is limited. The purpose of this study was to compare the outcome of medical and surgical management for CRS.

Methods: This was a prospective cohort study. Patients registered for the study were diagnosed as CRS based on history, clinical examination and investigation findings. All patients were initially subjected to medical management for 3 weeks and refractory cases were then subjected to surgical intervention. Subjective and objective improvements assessed with SNOT-22 score and Lund-Kennedy (LK) score respectively were analysed statistically.

Results: Out of the 100 patients registered for the study, 37% had nasal polyposis while 63% were without polyposis. When subjective and objective improvements were compared between groups receiving medical management alone and those receiving combined management, the difference was not found to be statistically significant ($p < 0.05$).

Conclusions: Although the decision regarding treatment modality to be used in CRS should depend on individual case, all cases can be subjected to a maximal medical therapy initially while reserving surgery for cases which do not improve.

Keywords: Chronic rhinosinusitis, Medical management, Surgical management

INTRODUCTION

CRS is characterized by prolonged mucosal inflammation of nose and paranasal sinuses. According to the European position paper on rhinosinusitis and nasal polyposis: 2012 (EPOS 2012), CRS is defined by persistent presence of two major or one major and two minor symptoms for >12 weeks supported by objective endoscopic or radiologic finding.¹ Currently it affects 10% population worldwide.²

It may present as CRS with nasal polyposis (CRSwNPs) or without polyposis (CRSsNPs). The present treatment protocol consists of aggressive medical management with or without surgical management with functional

endoscopic sinus surgery (FESS). Medical management includes use of antihistaminic, steroid sprays, immunomodulatory antibiotics, nasal douches, systemic steroids, immunotherapy like dupilumab and aspirin desensitization.³ Surgery includes debridement of the sinuses and establishing wide open pathways for their drainage.

There is still limited literature available on comparative effectiveness of medical therapy alone versus endoscopic sinus surgery (ESS) with continued medical therapy.⁴

This study had been undertaken to add to our understanding of management of CRS.

METHODS

This prospective cohort study was carried out at a tertiary care center in Central India from June 2018 to June 2020. A total of 100 patients diagnosed as CRS as per EPOS 2012 guidelines and willing to consent for the study were included. Patients with complications of CRS, orbital cellulitis, osteomyelitis, meningitis, those with systemic causes of CRS, fungal rhinosinusitis, malignancy and pregnant females were excluded from the study.

Based on clinical history, examination and relevant investigation findings, patients were divided into two main groups, CRSwNPs and CRSsNPs. All the patients were initially subjected to medical therapy with tablet azithromycin 500 mg bd for 14 days, tablet levocetirizine (5 mg)+montelukast (10 mg) hs for 3 weeks, mometasone nasal spray 1 puff od for 3 weeks and saline nasal douches bd for 3 weeks. In patients with partial relief, tablet azithromycin was continued for 1 week more. Those with history of allergy were asked to avoid common allergens. Patients were counselled regarding correct method of nasal spray delivery and compliance. Subjective and objective improvements were assessed at the end of three weeks in both the groups. SNOT-22 score was used as a subjective tool.⁵ Endoscopic LK score was used as objective tool.⁶ Subjective or objective betterment of >60% was labelled as improvement. Medical treatment failure group was then subjected to combined management, appropriate surgical management including septal correction, limited fess or full house FESS based on endoscopic and radiological findings with continued medical treatment for 3 weeks post-surgery. Similar assessment was done.

Statistical analysis was done using the GraphPad prism 8 software. The improvements in LK endoscopy scores (objective) and SNOT-22 scores (subjective) for medical

management and combined management in both the main groups were compared. With the use of Kolmogorov-Smirnov test ($\alpha=0.05$), the data was declared as non-parametric and Mann-Whitney test was used further analysis.

RESULTS

Amongst the 100 patients registered in the study, 63 (63%) patients presented without polyps, that is, CRSsNPs while 37 (37%) presented with polyps, that is, CRSwNPs. The most common aetiological association deduced from history, examination and investigation findings was anatomical factors with allergy seen in 31 (31%) patients. This was followed by anatomical factors alone in 29 (29%), anatomical factors with infection in 11 (11%), only allergy in 11 (11%), only infection in 10 (10%), anatomical factors with GERD in 2 (2%), use of long term nasal decongestants in 2 (2%) and GERD alone in 1 (1%). Overall anatomical factors were the most common associations seen in 73 (73%) patients.

In patients with CRSwNPs, medical management only was carried out in 15 (40.54%) patients while 22 (59.46%) patients were subjected to combined management. In patients with CRSsNPs, medical management only was carried out in 46 (73.02%) patients while combined management was carried out in 17 (26.98%) (Table 1).

After 3 weeks of treatment, in CRSwNPs subjective improvement was seen only in 12 (32.43%) patients out of 37 patients subjected to medical management only while same number of patients showed objective improvement. From the remaining, 3 patients were medically unfit for surgery while amongst the 22 patients, further subjected to combined management, 17 (77.27%) showed subjective improvement and 18 (81.82%) showed objective improvement.

Table 1: Categorisation of patients (n=100).

Groups	Category of patients included		Number of patients (n=100) (%)
I (CRSwNPs) (n=37)	A	Medical management only	15 (40.54)
	B	Combined medical and surgical management	22 (59.46)
II (CRSsNPs) (n=63)	C	Medical management only	46 (73.02)
	D	Combined medical and surgical management	17 (26.98)

Table 2: Treatment outcomes in different groups.

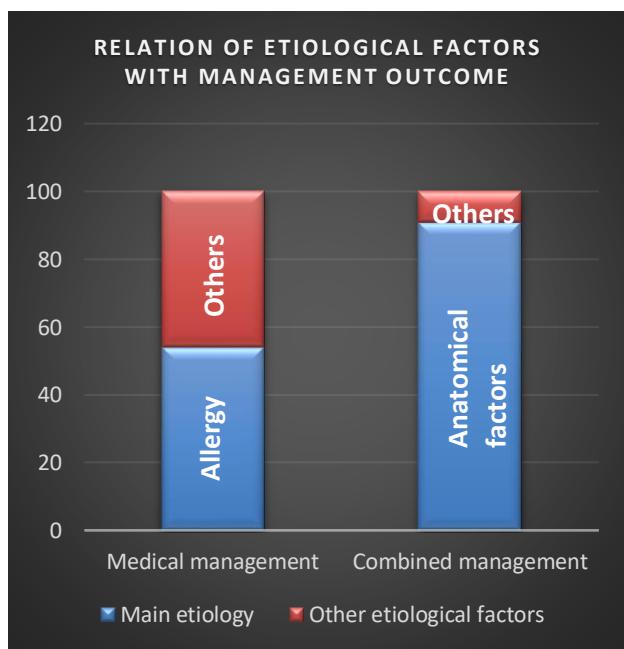
S. no.	Category of patients	Patients showing >60% improvement in SNOT-22 score (%)	Patients showing >60% improvement in LK endoscopy score (%)
1	Group A: CRSwNPs medical management	12 (32.43)	12 (32.43)
2	Group B : CRSwNPs combined treatment	17 (77.27)	18 (81.82)
3	Group C: CRSsNPs medical management	38 (60.32)	40(63.49)
4	Group D: CRSsNPs combined treatment	13 (76.47)	14(82.35)

Table 3: Statistical comparision of improvements in SNOT-22 and LK endoscopy scores.

Comparison	Group A versus B (CRSwNPs)		Group C versus D (CRSsNPs)	
	LK score improvement	SNOT-22 score improvement	LK score improvement	SNOT-22 score improvement
P value	0.3725	0.5453	0.6697	0.0694
Significantly different (p<0.05)	No	No	No	No

In patients of CRSsNPs subjective improvement in patients receiving medical management was seen in 38 (60.32%) patients out of 63 patients while objective improvement was seen in 40 (63.49%) patients. From the remaining, 8 patients were deemed as unfit for surgery while 17 were subjected to combined management amongst whom 13 (76.47%) showed >60% subjective improvement and 14 (82.35%) showed objective improvement (Table 2).

When comparing amongst medical and combined treatment in patients with CRSwNPs and CRSsNPs, the statistical test applied to improvements in SNOT-22 and LK scores showed no significant difference ($p<0.05$). This showed that the subjective and objective improvement after medical management and after combined treatment was statistically equivalent in CRS patients (Table 3).

**Figure 1: Percentage etiological distribution in relation to treatment.**

When relation of aetiology with the treatment outcome was studied, allergy was the major associated aetiology seen in 27 (54%) patients showing improvement with medical management alone and anatomical variation was the most common associated aetiology seen in 27 (90.91%) patients showing improvement with combined

surgical and medical management (Figure 1). In patients with anatomical variation mainly concha bullosa, paradoxical middle turbinate, enlarged bulla ethmoidalis, pneumatised uncinate, Haller cell, Agger Nasi cell and accessory ostium, significant improvement was achieved after subjecting the patients to surgery.

DISCUSSION

Although according to current guidelines, patients with CRS are subjected to medical management with surgery reserved for severe or refractory cases, the management still varies with individual case.

In current study, medical management was provided for a period of 3 weeks in all patients and those who did not show improvement and were fit for surgery were subjected to surgical management while continuing medical management postoperatively for 3 weeks. Amongst patients with nasal polyps, 32.43% showed subjective and objective improvements with medical management alone while amongst patients subjected to combined management, 77.27% showed subjective and 81.82% showed objective improvements. In patients without nasal polyposis, subjective improvement was seen in 60.32% and objective improvement was seen in 63.49% with medical management alone. In patients without nasal polyposis subjected to combined management, subjective improvement was noticed by 76.47% while objective improvement was seen in 82.35% patients. However, the difference in the improvements noted after medical treatment alone and the combined medical and surgical treatment was not statistically significant. Patients who showed improvement after medical management alone had allergy as underlying major etiology (54%). Patients who required surgical intervention had associated anatomical factors as major etiology (90.91%).

The study conducted by Ragab et al measured both subjective and objective outcomes similar to current study.⁷ While they found no difference in outcomes of medical and surgical management, they emphasized that CRS should first be treated with maximal medical therapy, surgery being reserved for refractory cases. Similarly, the study undertaken by Modgil also showed that patients who underwent only medical treatment and those who underwent combined medical and surgical treatments showed equal amounts of improvements.⁸ Khalil et al in their review of large randomized control

trials comparing medical and surgical management showed that surgery does not confer any additional benefit over medical management.⁹

A multi-institutional study conducted by Smith et al showed that surgery shows improvement in patients refractory to medical management.¹⁰ A meta-analysis conducted by Patel et al assessed quality of life, healthcare utility, endoscopic improvements in groups with prior appropriate medical therapy who were then subjected to a continued medical management or surgical intervention.¹¹ The study concluded that continued medical management maintains outcome in patients with mild disease while surgery results in improvement in those with severe disease. These findings were similar to current study where patients not responding to medical management showed improvement after undergoing surgery.

CONCLUSION

In current study, there was no significant difference in the improvements obtained in both the management groups viz medical management alone and combined medical and surgical management, irrespective of the type of CRS. Patients not improving after appropriate medical management alone, improved with added surgical intervention. Anatomical factors were the major etiological associations in these patients. Patients showing improvement with medical management alone had allergy as main underlying etiology. Thus, decisions regarding the mode of treatment in patients with CRS should be tailor-made to suit the individual case.

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