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Original Research Article

A study on evaluation of sino-nasal outcome test-22 scores in chronic rhinosinusitis patients undergoing functional endoscopic sinus surgery in a tertiary care centre

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ABSTRACT

Background: Chronic rhinosinusitis (CRS) is defined as an inflammation of the nose and paranasal sinuses and is characterized by two or more cardinal symptoms like nasal blockage/obstruction/congestion, nasal discharge (anterior/posterior nasal drip), facial pain/ pressure, reduction or loss of smell.
Methods: The 55 patients diagnosed with CRS with and without nasal polyps undergoing functional endoscopic sinus surgery were included in this study, whose sino-nasal outcome test 22 (SNOT-22) scores were compared both pre operatively and post op, 3 months after functional endoscopic sinus surgery.
Results: Total score of SNOT-22 was significantly lower in CRS patients post-operatively when compared to pre-operative score of SNOT-22 ($p<0.0001$).
Conclusions: Functional endoscopic sinus surgery effectively improved quality of life of patients with CRS.

Keywords: CRS, Functional endoscopic sinus surgery, SNOT-22

INTRODUCTION

Chronic rhinosinusitis (CRS) is the most common otolaryngologic disease worldwide that has a great impact on quality of life. CRS is defined as an inflammation of the nose and paranasal sinuses and is characterized by two or more cardinal symptoms like nasal blockage/ obstruction, congestion, nasal discharge (anterior/posterior nasal drip), facial pain/ pressure, reduction or loss of smell.

Either endoscopic signs (polyps, mucopurulent discharge, oedema/ mucosal obstruction) or computed tomography (CT) changes like mucosal changes within the osteomeatal complex and or sinus should be present. Disease duration is defined as >12 weeks.

First-line therapy for treatment of CRS is aimed at reducing underlying inflammation and facilitating clearance of the paranasal sinuses. Antibiotics, topical steroids, systemic steroids, and nasal saline irrigation are mainstays of treatment. Unfortunately, many patients are refractory to this treatment and ultimately require functional endoscopic sinus surgery (FESS) to achieve improved symptom control and quality of life.

There is a growing need for a simple, reliable, system specific standardized outcome measure that can help us explore CRS in a more uniform way and help us to take into account patients health related quality of life. The sino-nasal outcome test 20 (SNOT-20) and 22 (SNOT-22) are validated patient-reported measures of symptom severity and health-related quality of life in sinonasal conditions. SNOT-22 is a modified version of SNOT-20.[1]

METHODS

A prospective study was carried out at the department of otorhinolaryngology head and neck surgery, Alluri Sitarama Raju academy of medical sciences, Eluru, Andhra Pradesh in a span of 1 year i.e., from February 2021 to February 2022.

Sample size calculation

A minimum of 38 patients was calculated by taking incidence of 2.5%, which was taken from the study of Yuan et al. [2]

During the present study, a total of 55 patients were included. Thorough history was taken along with clinical examination and endoscopic evaluation of paranasal sinuses were performed to arrive at a diagnosis of CRS. Informed consent was obtained from all the participating patients.

A total of 55 patients who were diagnosed with CRS were categozied into two groups, one is CRS with nasal polyps and the other is CRS without nasal polyps. SNOT-22 scores were taken before and after three months of FESS.

Inclusion criteria

All the patients who were diagnosed with CRS, age more than 33 years, and those willing to give consent were included in the study.

Exclusion criteria

Patients with previous surgeries of nose, nasopharynx, paranasal sinuses and cases of sinonasal malignancy were excluded from the study.

Procedure

All the patients underwent a complete history and ENT examination. Rigid nasal endoscopy and non-contrast enhanced computed tomography (CT) scans of patients were done to find the extent of the disease. The SNOT-22 questionnaire was administered to measure quality of life and scores for each domain as well as for all domains was calculated for each patient. The mean scores before and after 3 months of FESS of each group were compared using the paired T test. The statistical analysis was carried out with the program SPSS trial version 26. A level of significance was attributed statistically for $p<0.05$, with an interval of 95% confidence.

RESULTS

The study was done at the department of otorhinolaryngology head and neck surgery, Alluri Sitarama Raju academy of medical sciences, Eluru, Andhra Pradesh in a period of 1 year (February 2021 to February 2022). It was a prospective study. The epidemiological parameters and SNOT-22 scores of chronic rhinosinusitis patients were compared before and 3 months after FESS, and their mean scores were compared using paired t-test as described here.

A total of 55 patients were included in this study based on inclusion and exclusion criteria. Out of 55 patients, majority were found to be males, i.e., 78% followed by females who are 12 members i.e., 22%.

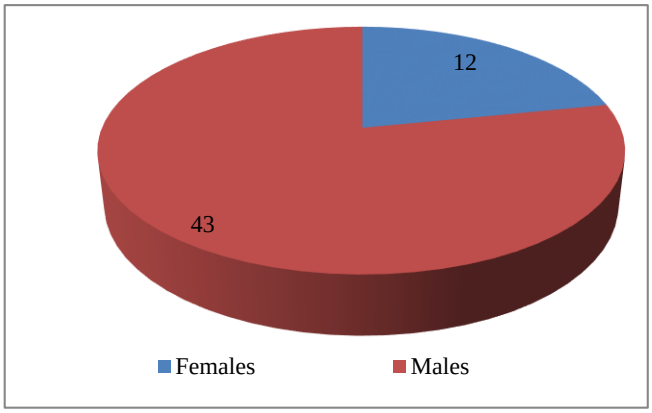

Figure 1: Distribution of study subjects according to gender.

In Figure 2, the minimum age of the patients is 33 years, maximum age of the patients was 75 years with a mean age of 54 years. Only those patients whose symptoms lasted for greater than 3 months are considered in this study.

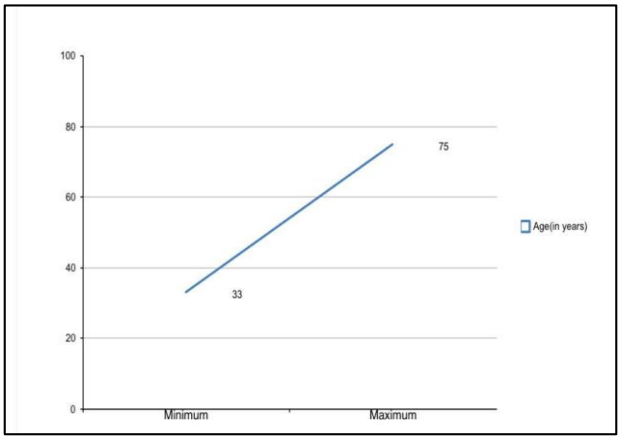

Figure 2: Age distribution (years) of study subjects.

Table 1 summarizes the mean scores of patients with chronic rhinosinuitis with and without polyps were compared preoperatively and 3months postoperatively. The preoperative mean SNOT-22 scores were higher in rhinological and psychological subscales and the postoperative scores were lower showing greatest improvement of patients symptoms in these two subscales. The subscales least affected were ear and facial symptoms and sleep function.

Table 1: SNOT-22 mean scores before and after surgery.

Subscale	Before surgery		After surgery	
	CRS with polyps	CRS without polyps	CRS with polyps	CRS without polyps
Rhinological symptoms	21.63	15.05	8.75	10.12
Ear and facial symptoms	11.94	9.12	4.69	5.24
Sleep function	10.31	8.46	4.38	5.15
Psychologic problems	18.19	12.04	8.13	7.05

Table 2: The mean difference between SNOT-22 score before and after surgery.

Variables	Before intervention	After intervention	Score difference	T	P value
CRS with polyps	68.69	28.63	40.06	10.95	<0.0001
CRS without polyps	51.68	20.36	31.32	9.67	<0.0001

As shown in Table 2, the mean scores of patients with chronic rhinosinuitis with and without polyps were compared preoperatively and 3 months postoperatively. The preoperative mean SNOT-22 scores were higher in both groups of patients i.e., those with chronic rhinosinuitis with and without polyps. There was statistically significant difference, p<0.0001 in pre-operative and post-operative SNOT-22 mean scores in patients of CRS with and without polyps, and the difference was more in patients with chronic rhinosinuitis polyps than in patients without polyps.

DISCUSSION

Rhinosinusitis is a common disease worldwide, affecting the quality of life of the person. CRS is a debilitating condition with significant economic impact.[3] Most authors have shown that FESS is effective in treating recalcitrant CRS.[4-6]Assessment of outcome following FESS includes both endoscopic and quality of life assessment. Quality of life assessment can be assessed by various tools specific for sinonasal diseases like chronic sinusitis survey (CSS), respiratory symptom disability index (RSDI), respiratory symptom index (RSI) and SNOT-22. Of these, the SNOT-22 is one of the most widely used tools for measuring the quality of life in patients with CRS. The test consists of 22 questions which can be divided into four subdomains (rhinological, ear and facial symptoms, sleep and psychological). This questionnaire is easily administered and reflects the severity of all the major symptoms associated with CRS.[7]

In a study carried out by Hopkins et al it was reported that SNOT-22 scores of patients undergoing to nasal polypectomy improved from 41.0 before surgery to 23.1, 3 months after surgery, while the scores of the patients undergoing surgery for CRS alone improved from 44.2 to 31.2.[8] In this study, the preoperative score in SNOT-22 was not similar in both groups CRS with and without nasal polyps, which shows that the characteristics of the patients are different, but in the postoperative period, the scores are similar which indicates the improvement in the signs and symptoms and quality of life of patients of both the groups.

Zachary et al conducted a meta-analysis in which they had evaluated the mean change in the SNOT-22 test scores in patients who underwent endoscopic surgery of the nose and paranasal sinuses for the treatment of CRS. They concluded that all studies showed a statistically significant change in mean scores of SNOT-22 between the initial time points and postoperative (p<0.001) which coincides with this study.[9] In a study by Rajpurohit et al it was found that SNOT-22 can be used in routine clinical practice to inform clinicians about a full range of problems associated with CRS.[10] In a study by Rabii et al it was found that that FESS improves all domains of quality of life of patients with CRS.[11]

Limitation

As the number of cases studied was less, this study may not completely give the role of functional endoscopic sinus surgery in CRS patients, which constitute the limitation of the study.

CONCLUSION

It was observed in this study that endoscopic sinus surgery improved the quality of life of patients with CRS with and without polyps. It was found in this study that the improvement in quality of life of patients is higher in the group with polyps than in individuals without polyps, according to the SNOT-22 questionnaire, which is consistent with other studies conducted in similar conditions.

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