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Original Research Article

Pre-treatment clinical study of rhinosinusitis impact on the quality of life among patients having both external nasal deformity and deviated nasal septum

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ABSTRACT

Background: Sino-nasal disease often gives an experience of impacting quality of life significantly, more so among chronic cases. Hence a self-perceived disease specific impact viz rhinosinusitis disability index (RSDI) which is a validated reliable measure of quality of life is being studied.
Methods: A prospective study conducted on patients, attending department of ENT on out and or in-patient basis who are diagnosed to have rhinosinusitis with external nasal deformity and deviated nasal septum (DNS) were selected on simple random basis for this study between July 2018 to November 2019. This study group subjected for answering standard questionnaire of RSDI proforma before treatment. Data statistically analyzed using IBM SPSS version 22.
Results: Among the statistically calculated 'n' (40) patients of this study, 23 were male (57.5%) and 17 were female (42.5%) patients of the age between 15-45 years. In our study, majority of patients (n=23) had simple type DNS (57.5%), followed by obstructive type 37.5% (n=15) and impacted type 5% (n=2) and majority of patients showed type I (50%) external nasal deformity followed by type V (25%). In our study, 11 patients were diagnosed with acute rhinosinusitis, 15 patients with chronic rhinosinusitis without nasal polyps (CRSsNP) and 14 patients with chronic rhinosinusitis with nasal polyps (CRSwNP). The physical, functional and emotional domains showed no statistical significance with respect to external nasal deformity and DNS. However, disease factor had statistically significant impact ($p<0.05$) on the quality of life among rhinosinusitis patients with mean scores of 13.7, 19.42, and 10.80.
Conclusions: In rhinosinusitis patients, the disease affects the quality of life in terms of physical, functional and emotional domains, but not by the external nasal deformity and or DNS associated.

Keywords: Quality of life, RSDI, Rhinosinusitis, External nasal deformity, DNS

INTRODUCTION

Rhinosinusitis is a condition which impairs the quality of life significantly and the symptoms of rhinosinusitis disrupt the patient's day-to-day life by interfering with work, leisure and sleep.[1,2] These symptoms have a debilitating effect on productivity and patient's emotional status, impacting the quality of life.[3,4]

Quality of life is an individual's personal experience that reflects not only health status but other factors in a patient's life which can only be described by each individual.[5] These measures provide a reliable standard as a health outcome, especially for chronic conditions.

To measure the impact on the quality of life, numerous instruments have been developed.[6,7] RSDI is one such measure of quality of life in rhinosinusitis.[8] Since its

introduction, the RSDI has demonstrated reliability in a variety of rhinologic diagnosis.[9] The RSDI questionnaire was developed in 1997 by Benninger and Senior. This instrument has 30 items containing three domains: physical, functional and emotional.[8]

This study emphasizes on impact on quality of life among pre-treatment patients clinically diagnosed of rhinosinusitis with both external nasal deformity and DNS.

METHODS

This is a prospective study, conducted from July 2018 to November 2019 in the department of ENT, Vijayanagar institute of medical sciences, Ballari, Karnataka, India. Ethical committee clearance was obtained before the study was conducted. The study included 40 patients of both sexes attending to department of ENT on out and or in-patient basis, who are diagnosed to have rhinosinusitis with external nasal deformity and DNS. These patients were selected on simple random basis.

The diagnosis of rhinosinusitis was defined using the criteria from the American academy of otorhinolaryngology-head and neck surgery (AAO-HNS) and was classified into acute rhinosinusitis, CRSsNP, CRSwNP.[10,11]

External nasal deformities were classified using Yong Jo Jang's classification. These deformities were classified into I-V types based on the orientation of bony pyramid and cartilaginous vault to each other.[12] Deviated nasal septum was classified using Cottles's classification into simple, obstructive and impacted types.[13]

Patients with previous history of medical and surgical treatment for rhinosinusitis and nasal deformities, post-traumatic external nasal deformity and DNS, cystic fibrosis, benign and malignant nasal tumors and those who refused to participate were excluded from the study.

On taking informed written consent in their own vernacular language, patients were subjected for answering standard questionnaire of RSDI proforma.

RSDI is a 30-item questionnaire. For each question, patient had the option of providing one of five answers, each of which was assigned a point value: never (0 points), almost never (1), sometimes (2), almost always (3), and always (4). The total score possible calculated by summing the individual items, ranges from 0 to 120.[8]

Qualitative data was represented in the form of frequency and percentage. Mean and SD value was calculated for continuous variables. Means between two groups were analyzed by using student's t test unpaired. ANOVA was used for multiple group comparison. A $p<0.05$ was considered statistically significant. Statistical analysis was done with IBM SPSS version 22 for windows.

RESULTS

Among the statistically calculated 'n' (40) of this study, 23 were male (57.5%) and 17 were female (42.5%) patients of age between 15-45 years (Figure 1). Majority of patients were between 30-39 years 35% (n=14). In study, more than 90% of patients presented with complaints of nasal obstruction and discharge, followed by headache and sneezing. Only few patients had complaints of the facial pain, anosmia and hyposmia (Table 1).

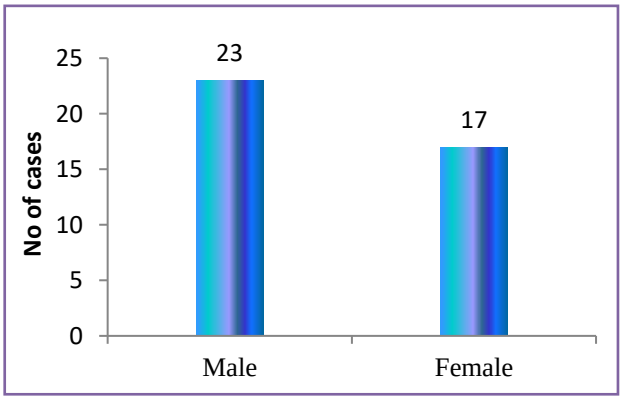

Figure 1: Gender wise distribution of patients.

Table 1: Patient presentation.

Chief complaints	Frequency	Percentage (%)
Nasal obstruction	37	92.5
Nasal discharge	38	95.0
Headache	26	65.0
Facial pain	7	25.0
Anosmia/hyposmia	10	25.0
Sneezing	21	52.5

In our study, out of 40 patients, 11 patients (27.5%) were diagnosed with acute rhinosinusitis, 15 patients (37.5%) with CRSsNP and 14 patients (35%) with CRSwNP (Table 2).

Table 2: Distribution of patients according to type of rhinosinusitis.

Rhinosinusitis	Frequency	Percentage (%)
Acute rhinosinusitis	11	27.5
Chronic rhinosinusitis without nasal polyp	15	37.5
Chronic rhinosinusitis with nasal polyp	14	35
Total	40	100

External nasal deformity was classified into I-V types using Yong Jo Jang's classification. In our study, majority of patients (57.5%) had type I external nasal deformity followed by type V (25%), type III (12.5%)

and type II (5%). No patients had type IV external nasal deformity (Figure 2).

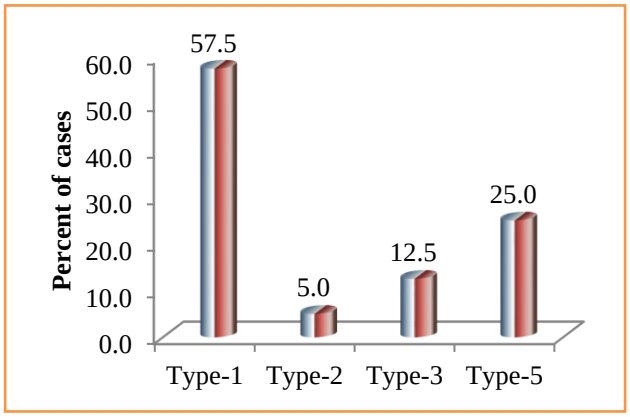

Figure 2: Distribution of patients according to type of external nasal deformity.

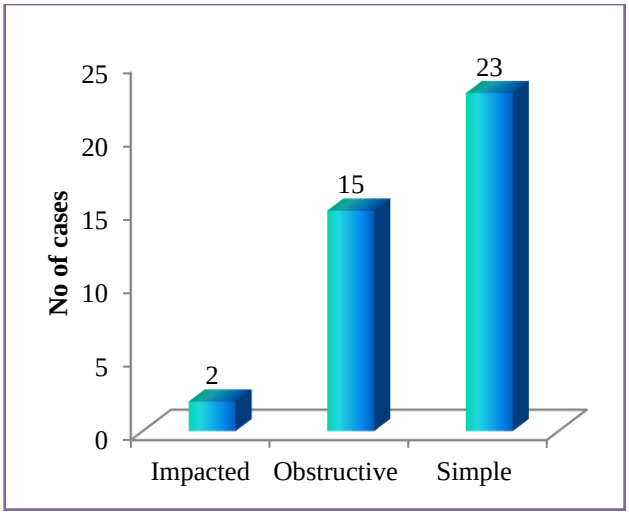

Figure 3: Distribution of patients according to type of DNS.

Table 3: RSDI scores for rhinosinusitis.

RSDI	Rhinosinusitis	N	Mean	Std. deviation	ANOVA	P value
Physical	Acute rhinosinusitis	11	12.36	3.17	3.198	0.05, Sig.
	Chronic rhinosinusitis without polyp	15	15.47	3.25		
	Chronic rhinosinusitis with polyp	14	13.29	3.34		
Functional	Acute rhinosinusitis	11	17.27	6.03	3.081	0.05, Sig.
	Chronic rhinosinusitis without polyp	15	22.13	4.63		
	Chronic rhinosinusitis with polyp	14	18.86	4.94		
Emotional	Acute rhinosinusitis	11	10.09	3.05	3.601	0.03, Sig.
	Chronic rhinosinusitis without polyp	15	12.47	2.64		
	Chronic rhinosinusitis with polyp	14	9.86	2.96		

Table 4: RSDI scores for external nasal deformity.

RSDI	External nasal deformity	N	Mean	Std. deviation	ANOVA	P value
Physical	Type-1	23	13.57	4.13	0.435	0.729, Not sig.
	Type-2	2	16.50	2.12		
	Type-3	5	13.80	1.92		
	Type-5	10	14.00	2.36		
Functional	Type-1	23	19.17	5.97	0.590	0.625, Not sig.
	Type-2	2	18.50	9.19		
	Type-3	5	18.40	4.93		
	Type-5	10	21.60	3.75		
Emotional	Type-1	23	10.87	3.06	0.056	0.982, Not sig.
	Type-2	2	10.50	3.54		
	Type-3	5	11.40	4.45		
	Type-5	10	10.80	2.66		

Deviated nasal septum was classified into simple, obstructed and impacted types by Cottle's classification. Among 40 patients, 23 patients (57.5%) had simple type of DNS, 15 patients (37.5%) had obstructive type and 2 patients (5%) had impacted type of DNS (Figure 3).

In our study data were analysed using scores of RSDI questionnaire. Table 3, 4 and 5 shows the individual subscale results for the rhinosinusitis, external nasal deformity and DNS respectively. When looking at the subscales as a group, the scores were highest in functional subscale followed by physical subscale and finally the emotional subscale.

Table 5: RSDI scores for DNS.

RSDI	DNS	N	Mean	Std. deviation	ANOVA	P value
Physical	Impacted	2	15.50	0.71	0.751	0.478, Not sig.
	Obstructive	15	14.47	4.69		
	Simple	23	13.30	2.48		
Functional	Impacted	2	22.50	0.71	0.358	0.701, Not sig.
	Obstructive	15	19.93	7.01		
	Simple	23	19.22	4.44		
Emotional	Impacted	2	11.00	1.41	0.012	0.987, Not sig.
	Obstructive	15	10.80	2.96		
	Simple	23	10.96	3.30		

The physical, functional and emotional domains showed no statistical significance with respect to the external nasal deformity and DNS ($p>0.05$). But these domain scores showed statistical significance ($p<0.05$) with respect to rhinosinusitis.

DISCUSSION

Rhinosinusitis is a condition, that affects at one time or another in life, which is a multifactorial disease that affects the patient's quality of life. RSDI, a disease-specific instrument, designed with 3 domains: physical, functional and emotional, used for assessment and comparison of disability which results from various rhinological diagnosis.[8]

In our study, among 40 patients, majority of patients were males (n=23) 57.5% and 42.5% (n=17) were females. Majority of patients fell in the age group between 30-39 years 35% (n=14). Most of the patients presented with complaints of nasal obstruction and nasal discharge.

In this study, 37.5% were diagnosed with chronic rhinosinusitis without nasal polyps (n=15), 35% with chronic rhinosinusitis with nasal polyps (n=14) and 27.5% with acute rhinosinusitis (n=11). Majority of the patients had simple type of DNS 57.5% (n=23) and type I eternal nasal deformity 57.5% (n=23).

In our study, the individual subscale scores were highest in functional followed by physical and emotional subscale in rhinosinusitis, external nasal deformity and DNS. In the study done by Senior et al the scores were highest for physical followed by functional and emotional subscale in rhinosinusitis, whereas the order was functional followed by emotional and physical subscale in septal deviation only.[14]

In our study, the quality of life domains in terms of physical, functional and emotional aspects are affected by the rhinosinusitis, but the associated external nasal deformity and DNS do not influence the quality of life.

Literature search reveals nil particular similar studies pertaining to this studies' nasal parameter, among rhinosinusitis patients. The authors prefer further more studies on this concept with a larger sample size.

CONCLUSION

In rhinosinusitis patients, the disease affects the quality of life in terms of physical, functional and emotional domains, but not by the external nasal deformity and or DNS associated.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Chen H, Katz PP, Shiboski S, Blanc P. Evaluating change in health-related quality of life in adult rhinitis: Responsiveness of the Rhinosinusitis Disability Index. Health Qual Life Outcomes. 2005;3(1):68.
2. Metson RB, Gliklich RE. Clinical outcomes in patients with chronic sinusitis. Laryngoscope. 2000;110(S94):24-8.
3. Campbell AP, Hoehle LP, Phillips KM, Caradonna DS, Gray ST, Sedaghat AR. Symptom control in chronic rhinosinusitis is an independent predictor of productivity loss. Eur Ann Otorhinolaryngol Head Neck Dis. 2018;135(4):237-41.
4. Erskine SE, Hopkins C, Clark A, Anari S, Robertson A, Sunkaraneni S et al. Chronic rhinosinusitis and mood disturbance. Rhinol. 2017;55(2):113-9.
5. Piccirillo JF, Merrit MG, Richards ML. Psychometric and clinimetric validity of the 20-item Sino-Nasal Outcome Test (SNOT-20). Otolaryngol Head Neck Surg. 2002;126:41-7.
6. Kremer B. Quality of life scales in allergic rhinitis. Curr Opin Allergy ClinImmunol. 2004;4:171-6.
7. Linder JA, Atlas SJ. Health-related quality of life in patients with sinusitis. Curr Allergy Asthma Rep. 2004;4:490-5.
8. Benninger MS, Senior BA. The development of the Rhinosinusitis Disability Index. Arch Otolaryngol Head Neck Surg. 1997;123:1175-9.

9. Senior BA, Glaze C, Benninger MS. Use of the Rhinosinusitis Disability Index (RSDI) in rhinologic disease. Am J Rhinol. 2001;15:15-20.
10. Rosenfeld RM, Piccirillo JF, Chandrasekhar SS, Brook I, Ashok Kumar K, Kramper M et al. Clinical practice guideline (update): adult sinusitis. Otolaryngol Head Neck Surg. 2015;152(2):S1-39.
11. Fokkens WJ, Lund VJ, Mullol J, Bachert C, Alobid I, Baroody F et al. European position paper on rhinosinusitis and nasal polyps 2012. Rhinol Suppl. 2012;3(23):1-298.
12. Jang JY, Wang JH, Lee BJ. Classification of the deviated nose and its treatment. Arch Otolaryngol Head Neck Surg. 2008;134(3):311-5.
13. Cottle MH. Structure and function of nasal vestibule. Arch Otolaryngol Head Neck Surg. 1955;62:173.
14. Senior BA, Glaze C, Benninger MS. Use of the Rhinosinusitis Disability Index (RSDI) in rhinologic disease. Am J Rhinol. 2001;15(1):15-20.

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