International Journal of Otorhinolaryngology and Head and Neck Surgery
Garg D et al. Int J Otorhinolaryngol Head Neck Surg. 2019 Sep;5(5):1172-1178
http://www.ijorl.com
pISSN 2454-5929 | eISSN 2454-5937

Original Research Article

DOI: http://dx.doi.org/10.18203/issn.2454-5929.ijohns20193427

Demographic and clinical profile of chronic rhinosinusitis patients in a rural based tertiary hospital

Deepika Garg[1], Ajay Kamble[2]*, Manish Puttewar[3]

Department of ENT-HNS, [1]MGIMS, Sewagram, Wardha, [2]GMC Chandrapur, Chandrapur, [3]Alexis Hospital, Nagpur, Maharashtra, India

Received: 25 June 2019
Revised: 09 July 2019
Accepted: 11 July 2019

***Correspondence:**
Dr. Ajay Kamble,
E-mail: ajkamble2001@gmail.com

ABSTRACT

Background: Chronic rhinosinusitis (CRS) is one of the most common health problems which incurs significant medical costs and has severe impact on lower airway diseases and general health of the patient. The aim of this study was to describe the demographic and clinical profile of chronic rhinosinusitis patients.
Methods: In this study 94 patients were included. After taking a brief history, their clinical symptoms were assessed using SNSG test (sino nasal symptom grading test). The findings were further confirmed by diagnostic nasal endoscopy.
Results: We found that maximum number of patients were in the age group of 18-27 years with a slight male preponderance. Also rural population had more cases of CRS with nasal discharge being the commonest complaint at the time of presentation. After diagnostic nasal endoscopy (DNE) it was found that ethmoidal polyps are more common in CRS patients however more number of CRS patients presented without polyps.
Conclusions: We conclude that chronic rhinosinusitis manifests more in male and rural population with nasal discharge and ethomoidal polyps being the most common presentation. The subjective assessment of clinical symptoms could be done by SNSG test; however it further requires detailed studies.

Keywords: Chronic rhinosinusitis, Demography, Clinical profile

INTRODUCTION

The term chronic rhinosinusitis defined as a group of disorders characterized by inflammation of the mucosa of nose and paranasal sinuses of at least 12 consecutive weeks duration.[1]

It is one of the most frequent diseases encountered worldwide. Statistics from Centre for disease control indicate that 16.3% of the adult population is affected by this condition in United States and 5% to 15% population in Europe.[2]

Because of its prevalence (14%–16%) almost 2 per cent of outpatient visits to primary care offices, speciality practices or emergency departments are due to complaints of rhinosinusitis.[1,3]

In terms of healthcare related financial burden, this disease incurred costs of approximately US$ 7.19 billion in 1996 in the USA according to one of the studies.[4] With health care costs increasing and adjusting to inflation rates, this cost would be expected to be even more significant in the present era. In one of the recent studies by Caulley et al, they found that the economic burden attributable to this disease was an estimated $60.2 to $64.5 billion US dollars in 2011.[5]

The incidence of sinusitis has increased dramatically with the increasing incidence of asthma, allergies, and other

upper respiratory tract infections. By 1992, rhinosinusitis was the fifth most common diagnosis where an antibiotic was prescribed.[6] The data about incidence and prevalence of CRS in India is not widely reported. In one of the studies, the reported disease burden was said to affect 15% of the population probably at least once in their lifetime.[7]

Chronic rhinosinusitis is a heterogeneous entity that may be due to a number of different contributing factors that coexists with or without nasal polyp. The clinical presentation of CRS vary but essentially would have one or more of presentation like post nasal discharge (PND), nasal congestion, nasal obstruction, facial pain, pressure, and/or fullness, disorders of smell, cough to eustachian tube dysfunction.

Clinical examination when aided by endoscopic examination helps in detection and evaluation of the anatomical evaluations like septal deviation along with other inflammatory changes like polypoidal changes, abnormal purulent secretions, inflammatory edema, and fungal accumulation. This can be further aided by radiological investigations.

Chronic rhinosinusitis without nasal polyp is the most frequent form of CRS. Chronic rhinosinusitis with nasal polyp is characterized by the presence of grape-like structures in the upper nasal cavity or paranasal sinuses.This entity may be associated with aspirin sensitivity (AS) or non-steroidal anti-inflammatory drug (NSAID) sensitivity and asthma and is called aspirin-exacerbated respiratory disease (AERD) or AS triad disease (Widal syndrome, Samter's triad), first reported by Widal in 1922.[8]

Approximately 20% of patients with chronic sinusitis have nasal polyposis.[9] It was estimated that CRS affects 14–16% of the population in the USA.[10]

There is less data available about the presentation of clinical profile of CRS in Indian setup and more so less from the rural population. Therefore the aim of this study was to study the demographic and describe the clinical profile of chronic rhinosinusitis patients. This in turn aids in diagnosis and proper surgical intervention and helps in decreasing the burden of disease.

METHODS

Institutional ethical committee approval was taken. This was a prospective randomized controlled study in which 94 patients of chronic rhinosinusitis attending Otorhinolaryngology and Head Neck Surgery OPD over a period of 2 years i.e. 1st August 2010 to 31st September 2012 were included. The patients who came to OPD were explained about the study and only those who were found eligible and volunteered were included. Written informed consent was taken from the patients after explaining them about the study design and clarifying all their doubts.

Inclusion criteria

Inclusion criteria were patients with history of running of nose for more than 12 weeks; age above 18 yrs; written informed consent of the patient.

Exclusion criteria

Exclusion criteria were age less than 18 yrs; history of previous nasal or sinus surgery; acute rhinosinusistis; malignancies, diabetes, tuberculosis; pregnancy, lactation; patients who were not willing for participate in study.

In recent studies by Rudmik et al, the authors studied around 15 "patient reported outcome measures" (PROM) questionnaire/surveys related to chronic rhinosinusitis. They found that most of the PROMs were developed for research for e.g. like determining the changes in health care quality related of life. They concluded that on the basis of quality assessment, the 22 item SNOT, the questionnaire of olfactory disorders and the sinusitis control test provided one of the best quality CRS specific PROMS. They also suggested that future CRS PROMs will also need to incorporate the clinical domains which can assess the comorbid diseases along with patient values and preferences which can improve the clinical decision making.[11]

Table 1: Sinonasal symptom grading.

Considering how severe the problem is when you experience it and how frequently it happens, please rate each item below on how 'bad' it is by circling the number that corresponds with how you feel using this scale	No problem	Very mild problem	Mild or slight problem	Moderate problem	Severe problem	Problem as bad as it can be
1. Nasal discharge	0	1	2	3	4	5
2. Nasal obstruction	0	1	2	3	4	5
3. Headache	0	1	2	3	4	5
4. Facial pain/pressure	0	1	2	3	4	5
5. Post nasal drip	0	1	2	3	4	5

Continued.

Considering how severe the problem is when you experience it and how frequently it happens, please rate each item below on how 'bad' it is by circling the number that corresponds with how you feel using this scale	No problem	Very mild problem	Mild or slight problem	Moderate problem	Severe problem	Problem as bad as it can be
6. Sneezing	0	1	2	3	4	5
7. Epistaxis	0	1	2	3	4	5
8. Sense of smell	0	1	2	3	4	5
9. Sense of taste	0	1	2	3	4	5
10. Mouth breathing	0	1	2	3	4	5
11. Snoring	0	1	2	3	4	5
12. Halitosis	0	1	2	3	4	5
13. Pain in throat	0	1	2	3	4	5
14. Cough	0	1	2	3	4	5
15. Ear ache	0	1	2	3	4	5
16. Ear fullness	0	1	2	3	4	5
17. change of voice	0	1	2	3	4	5
18. Fever	0	1	2	3	4	5
19. Difficulty falling asleep	0	1	2	3	4	5
20. Waking up at night	0	1	2	3	4	5
21. Lack of a good night's sleep	0	1	2	3	4	5
22. Waking up tired	0	1	2	3	4	5
23. Fatigue during the day	0	1	2	3	4	5
24. Reduced productivity	0	1	2	3	4	5
25. Reduced concentration	0	1	2	3	4	5
26. Frustrated/restless/irritable	0	1	2	3	4	5
27. Sad	0	1	2	3	4	5
Total						

In our study, all cases satisfying the above criteria underwent detailed history with recording of gradation of symptoms on a sino nasal symptom grading (SNSG) test (Table 1) which was modified form of sino nasal outcome test (SNOT-22).[12]

This was done to include those symptoms in the evaluation process which were seen in our OPD patients but were not a part of SNOT-22.

This was followed by detailed ear, nose, and throat (ENT) examination. In nasal examination, external, anterior rhinoscopy and posterior rhinoscopy and paranasal sinus examination was carried out. Clinical diagnosis of chronic rhinosinusitis was arrived and diagnostic nasal endoscopic (DNE) examination was done.

The Data was recorded and analysed through statistics software.

RESULTS

Age distribution

This study comprised of patients in the range of 18 years (minimum age) to 64 years (maximum age) with the mean age being 33.44 years (Figure 1).

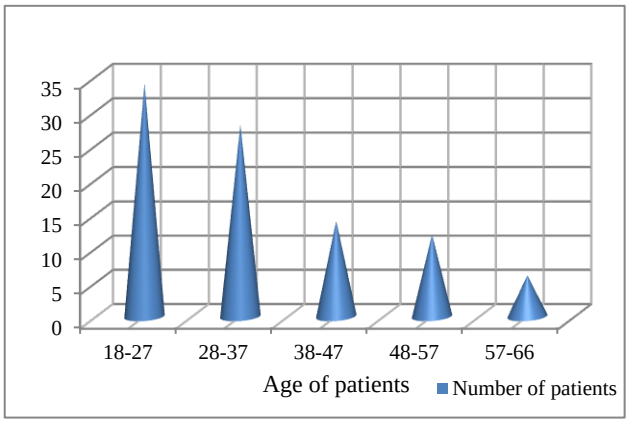

Figure 1: Age wise distribution of patients of CRS (n=94).

Sex distribution

We found that out of 94, 49 (52.1%) patients were male and 45 (47.8%) were female. The male female ratio therefore was 1.08:1 (M: F ratio 1.08:1) (Figure 2).

Geographic distribution

There were 51 (54.25%) patients from rural area while 43 (45.7%) were from urban area (Table 2).

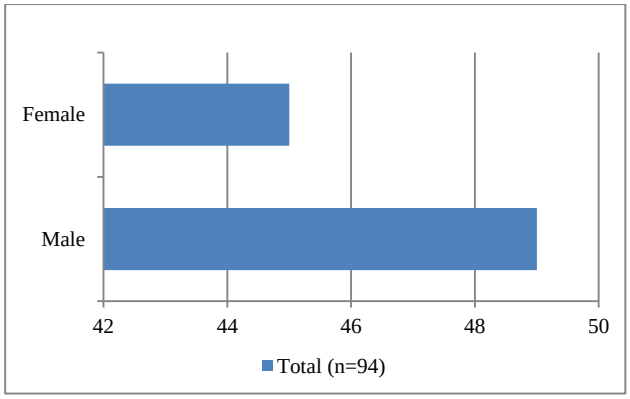

Figure 2: Sex distribution in the patients of chronic rhinosinusitis (n=94).

Table 2: Geographic distribution (n=94).

Area	N (%)
Rural	51 (54.25)
Urban	43 (45.74)
Total	94 (100)

Presenting complaints in study subjects of chronic rhinosinusitis

Nasal discharge was the most common complaint with which patient presented to the hospital and was seen in 94 (100%) of patients, while halitosis was the least common, seen in 2 (2.1%). The remaining presenting complaints have been explained in detail in the table and figure below (Table 3).

Table 3: Presenting complaints in patients of chronic rhinosinusitis (n=94).

Complaints	No. of patients	Percentage (%)
Nasal discharge	94	100
Headache	87	92.5
Nasal obstruction	82	87.2
PND	66	70.2
Sneezing	27	28.7
Mouth breathing	16	17.0
Ear fullness	12	12.7
Loss of smell	8	8.5
Snoring	7	7.4
Loss of taste	6	6.3
Change in voice	5	5.3
Epistaxis	4	4.1
Anosmia	4	4.1
Throat pain	3	3.1
Cough	3	3.1
Earache	3	3.1
Fever	3	3.1
Halitosis	2	2.1

Duration of disease under study

Maximum number of subjects 41 (43.61%) had the complaints since 3 to 6 months followed by 24 subjects (25.53%) who had complaints since 9.1 to 12 months. One subject each had complaints since 25 to 30 months and 36 months (1.06%) (Table 4).

Table 4: Distribution of patients according to duration of symptoms (n=94).

Duration (months)	N (%)
3-6	41 (43.61)
6.1-9	6 (6.38)
9.1-12	24 (25.53)
12.1-24	16 (17.02)
24.1-36	6 (6.38)
>36	1 (1.06)
Total	94 (100)

N=number of patients.

SNSG score

In present study, all cases underwent detailed history with recording of gradation of symptoms on a SNSG test. In this test, the symptoms were graded according to the severity experienced by the subjects from 0 to 5, where 0 means no problem, 1-very mild problem, 2-mild or slight problem, 3-moderate problem, 4-severe problem, and 5-problem as bad as it can be.

Table 5: SNSG at presentation in our study (n=94).

SNSG score	No. of patients (%)
1-10	6 (6.3)
11-20	75 (79.7)
21-30	11 (11.7)
31-40	2 (2.1)

The minimum SNSG score experienced by patient was 9 and maximum score was 38.

The maximum number of subjects i.e. 75 (79.7%) had SNSG score between 11 to 20, followed by 11 (11.7%) subjects who had score between 21 to 30.

Six (6.3%) subjects had score between 1 to 10 while the rest of 2 (2.1%) subjects had score between 31 to 40 (Table 5).

Occurrence of polyp in CRS

Diagnostic nasal endoscopy was done in all the patients. It was seen that 34 (36.17%) CRS patients presented with polyps and rest of patients i.e. 60 (63.82%) were without polyps. Out of these 34 patients, 8 (23.52%) presented with antrochoanal polyps and 26 (76.47%) patients presented with ethmoidal polyps (Table 6 A and B).

Table 6A: Occurrence of polyp in CRS (n=94).

CRS patients	N (%)
With polyp	34 (36.17)
Without polyp	60 (63.82)
Total	94 (100)

Table 6B: Types of polyp in CRS.

Types of polyp	N (%)
No. of polyp cases	34 (36.17)
Antrochoanal polyp	8 (23.52)
Ethmoidal polyp	26 (76.47)

DISCUSSION

Age and sex distribution

In the present study, patients ranged from age 18 years to 64 years. The minimum age was 18 and maximum age was 64 years.

Maximum number of patients i.e. 34 (36.17%) were in the age group of 18-27 years while the minimum i.e. 6 (6.38%) were in the age group of 57-66 years. The above data suggested that as the age increased, the number of patients of CRS decreased. The mean age of the patients in the study was 34.44 years.

Our data correlates with the studies of Ogunleye et al, Ron et al, Ugincius et al, Singh et al in which the mean age of patients of chronic rhinosinusitis (CRS) ranged from 33 to 39.4 years.[13-16]

The present study included 49 (52.1%) males and 45 (47.8%) female. The male female ratio was 1.08:1 (M: F ratio 1.08:1). It correlated with studies of Ogunleye et al, Ameri et al and Ugincius et al.[13,17,15]

Geographic distribution in CRS

In the present study, there were 51 (54.25%) patients from rural area while 43 (45.7%) were from urban area.

No other studies were found in literature comparing the rural and urban distribution of CRS patients. The above comparative study is not from Indian setup and vis-a vis doesn't stand a direct comparison of actual difference between urban and rural population characteristics of two different countries. Also we would like to highlight the fact that our hospital caters to significant rural population.

The pathophysiology and diseases affection in rural population also needs to be weighed with factors like difference in economic status of the residents of the urban and rural areas. Also poorer indoor air quality and poor housing conditions may lead to increased exposure to dampness and mould, which may indirectly lead to CRS.

Presenting complaints in CRS

In the present study, nasal discharge was the commonest complaint with which patient presented to the hospital and was seen in 94 (100%) of patients, followed by 87 (92.5%) patients who complained of headache.

This correlates with studies of Rice et al, Levine et al, Nayak et al, Barnett, Venkatachalam et al in which the nasal discharge was the commonest complaint followed other symptoms i.e. nasal blockage and headache.[19-23]

Occurrence of polyps in CRS

In the present study, 36 (38.2%) CRS patients presented with polyps and rest of patients i.e. 58 (61.7%) were without polyps.

Our data correlates with studies of Ogunleye et al, Venkatachalam et al, Chaudhary et al, Damm et al, Deal and Kountakis in which the percentage of polyps in CRS ranged from 31.4% to 39.1%.[13,23-26]

In the study of Nayak et al, the percentage of polyps was found to be 20.5%.[21]

In another study of Larsen, patients with asthma, a prevalence of nasal polyp was 7–15% whereas in NSAID sensitivity, nasal polyps were found in 36–60% of patients.[27]

SNSG score

In the present study, the symptoms of the patients are graded based on sinonasal symptom grading. The mean sinonasal symptom grading at presentation was 15.79.

This SNSG score can be comparable with the sinonasal outcome test-20 SNOT-20 or SNOT 22. SNOT 20 and 22 is one of the most widely used quality of life instruments for sinonasal conditions and is intended for populations of people with rhinosinusitis.[28,12]

This instrument assesses a broad range of health and health-related quality of life problem including physical problems, functional limitations, and emotional consequences.

In the study of Fahmy et al the mean SNOT-20 score was 31.89 where as it is 45 in the study of Moghaddasi et al.[27,30]

CONCLUSION

We conclude in our study that chronic rhinosinusitis manifested more in middle aged patients with male preponderance, belonging from rural area. They clinically presented most commonly with nasal discharge and ethmoidal polyps. SNSG could be a reliable method for the subjective assessment of patients of chronic

rhinosinusitis, however this needs to be further evaluated in detail.

The limitations of our study were the sample size, single centre study. We feel further similar studies should be undertaken to generate more robust data from Indian population and to further add up to the present data.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Benninger MS, Ferguson BJ, Hadley JA, Hamilos DJ, Jacobs M, Kennedy DW, et al. Adult chronic rhinosinusitis: Definitions, diagnosis, epidemiology and pathophysiology. Otolaryngol Head Neck Surg. 2003;129(3):1-32.
2. BlackwelI DL, Collins JG, Coles R. Summary health statistics for US adults: National Health Interview Survey. Vital Health Stat. 2002;10:205.
3. Schappert SM, Burt CW. Ambulatory care visits to physician offices, hospital outpatient departments, and emergency departments: United States, 2001-02. Vital Health Stat 13. 2006;159:1-66.
4. Ray NF, Baraniuk JN, Thamer M, et al. Healthcare expenditures for sinusitis in 1996: contributions of asthma, rhinitis, and other airway disorders. J Allergy Clin Immunol. 1999;103(3):408-14.
5. Caulley L, Thavorn K, Rudmik L, Cameron C, Kilty SJ. Direct costs of adult chronic rhinosinusitis by using 4 methods of estimation: Results of the US Medical Expenditure Panel Survey. J Allergy Clin Immunol. 2015;136(6):1517-22.
6. McCaig LF, Hughs JM. Trends in antimicrobial drug prescribing among office –based physician in the United States. J Am Med Association. 1995;273:214-9.
7. Sandhu S, Gupta V, Matreja PS. Clinico-therapeutic Profile of Patients Suffering from Sinusits. J Transm Dis Immun. 2017;1:1.
8. Widal F, Abrami P, Lermoyez J. First complete description of the aspirin idiosyncrasy-asthma-nasal polyposis syndrome (plus urticaria). J Asthma. 1987;24(5):297-300.
9. Settipane GA. Epidemiology of nasal polyps. Allergy Asthma Proc. 1996;17:231-6.
10. Collins JG. Prevalence of selected chronic conditions: United States, 1990-1992. Vital Health Stat 10. 1997;194:1-89.
11. Rudmik L, Hopkins C, Peters A, Smith TL, Schlosser RJ, Soler ZM. Patient-reported outcome measures for adult chronic rhinosinusitis: A systematic review and quality assessment. J Allergy Clin Immunol. 2015;136:1532-40.
12. Hopkins C, Gillett S, Slack R, Lund VJ, Browne JP. Psychometric validity of the 22-item Sinonasal Outcome Test. Clin Otolaryngol. 2009;34:447-54.
13. Ogunleye AO, Nwargu OG, Lasisi AO, Ijaduola GT. Trends of sinusitis in Ibadan, Nigeria. West Afr J Med. 1999;18(4):298-302.
14. Shashy RG, Moore EJ, Weaver A. Prevalence of the Chronic Sinusitis Diagnosis in Olmsted County, Minnesota. Arch Otolaryngol Head Neck Surg. 2004;130(3):320-3.
15. Ugincius P, Kubilius R, Gervickas A, Vaitkus S. Chronic odontogenic maxillary sinusitis. Stomatologija. 2006;8(2):44-8.
16. Singh I, Sherstha A, Gautam D, Ojaswini. Chronic rhinosinusitis and nasal polyposis in Nepal. Clinical Rhinol. 2010;3(3):87-91.
17. Ameri AA, Eslambolchi A, Bakhshandeh H. Anatomic variants of paranasal sinuses and chronic Sinusitis. Iran. J Radiol. 2005;2(3,4):121-4.
18. Lewis ME, Roberts CA, Manchester K. Comparative study of the prevalence of maxillary sinusitis in later Medieval urban and rural populations in Northern England. Am J Physical Anthropol. 1995;98(4):497–506.
19. Rice DH. Endoscopic sinus surgery: Results at 2-year follow up. Otolaryngol Head Neck Surg 1989;101:476-9.
20. Levine HL. Functional endoscopic sinus surgery. Evaluation, surgery and follow up of 250 patients. Laryngoscope. 1990;100:79-84.
21. Nayak S, Kirtane MV, Ingale MV. Functional endoscopic sinus surgery-II (preliminary study). J Postgrad Med. 1991;37(1):31-4.
22. Winsted W, Barnett SN. Impact of endoscopic sinus surgery on global health perception: An outcomes study. Otolaryngol Head Neck Surg. 1998;119:486-91.
23. Venkatachalam VP, Bhat A. Functional endoscopic sinus surgery: A newer surgical concept in the management of chronic sinusitis. Indian J Otolaryngol Head and Neck Surg. 1999-2000;52(1):13-6.
24. Chaudhary N, Kapoor R, Motwani G, Gondotra SC. Functional endoscopic sinus surgery results in 69 patients. Indian J Otolaryngol Head and Neck Surg. 2000;52(1):5-8.
25. Damm M, Quante G, Jungehuelsing, Stennert E. Impact of functional endoscopic sinus surgery on symptoms, quality of life in chronic rhinosinusitis. Laryngoscope. 2004;112:310-5.
26. Deal RT, Kountakis SE. Significance of nasal polyps in chronic rhinosinusitis: symptoms and surgical outcomes. Laryngoscope 2004;114:1932-35.
27. Larsen K. The clinical relationship of nasal polyps to asthma. Allergy Asthma Proc. 1996;17(5):243-9.
28. Piccirillo JF, Merritt MG, Jr., Richards ML. Psychometric and clinimetric validity of the 20-Item Sino-Nasal Outcome Test (SNOT- 20). Otolaryngol Head Neck Surg. 2002;126(1):41-7.
29. Fahmy FF, McCombe A, Mckiernan DC. Sino nasal assessment questionnaire, a patient focused,

rhinosinusitis specific outcome measure. Rhinology. 2002;40;195-7.

30. Moghaddasi H, Taheri MS, Jalali AH, Shakiba M. Correlation of Lund-Mackay and SNOT-20 Before and After Functional Endoscopic Sinus Surgery (FESS): Does the Baseline Data Predict the Response Rate? Iran J Radiol. 2009;6(4):207-14.

Cite this article as: Garg D, Kamble A, Puttewar M. Demographic and clinical profile of chronic rhinosinusitis patients in a rural based tertiary hospital. Int J Otorhinolaryngol Head Neck Surg 2019;5:1172-8.