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Anatomical variation of frequency and intensity of symptoms in patients nose with chronic rhinosinusitis

Manoj Kumar Dehury

Associate Professor, Department of Anatomy, Govt Medical College and Hospital, Sundargarh,

Nilesh Rakate

Assistant Professor, Department of Anatomy, RKDF college, Bhopal

Shailendra Gupta

Assistant Professor Department of ENT, RSDKS GMC, Ambikapur

Pravin G. Dhone*

Professor & Head, Department of Pharmacology, RSDKS GMC, Ambikapur

*Corresponding author

Abstract--Chronic rhinosinusitis is one of the most frequent chronic disorders which influences the patient's quality of life significantly. The objective of this paper was to examine which are the most frequent and intensive symptoms in patients with chronic rhinosinusitis. The study done in 80 patients with clinical diagnosis of chronic rhinosinusitis that was endoscopically proven and computer tomography of the nose and paranasal sinuses. All the possible symptom was recorded in each and every patient (nasal congestion, nasal discharge, reduction or loss of smell, facial pain/pressure, headache, cough, fatigue, halitosis and ear pain/fullness) the intensity of every possible symptom was recorded. The patients were assessed properly and the intensity of their symptoms was recorded by visual analogue scale. Nasal discharge was the most frequent symptom in our study, it occurred in all 80 patients (100%), followed by nasal obstruction/ blockage in 74 patients (92.5%). Nasal discharge has been recorded as the most intensive symptom and it is significantly more intensive in comparison to nasal congestion which was the second on the intensity list. All other symptoms were significantly less frequent and less intensive.

Keywords--chronic rhinosinusitis, nasal, surgery, hyposmia.

Introduction

Chronic rhinosinusitis (CRS) is one of the most frequent chronic disorders which significantly influences the patients' quality of life. The objective of this paper was to examine which are the most frequent and the most intensive symptoms in patients with CRS, and also to determine if there is a correlation between a subjective assessment of the disease as a whole and individual symptom. Chronic rhinosinusitis (CRS) is an inflammatory condition of nasal and paranasal sinuses that lasts at least twelve weeks during which the symptoms do not remit entirely. Two or several symptoms are clinically diagnosed, one of which has to be nasal obstruction, or nasal discharge, while the remaining symptoms are facial pain/pressure and reduction or loss of smell; in children cough is recorded instead of reduction or loss of smell [1]. Along with the mentioned symptoms, these patients can experience fatigue, headache, cough in adults, earache and toothache, halitosis and other [2]. The final diagnosis of CRS is done endoscopically and/or by computer tomography (CT) [3].

Considering that most of these patients are the patients of general practitioners who do not have enough experience nor equipment to perform nasal endoscopy, the diagnosis of this disorder is frequently overrated [4]. It is a disorder that can be well-managed in most patients if adequate surgical or medicament treatment is provided. However, in a small number of patients, in spite of surgical and adequate medicament treatments (intranasal corticosteroids and up to two short antibiotic therapies or systemic corticosteroids in the course of the last year), satisfying control of the disorder is not attained and then we deal with a difficult-to-treat CRS [1]. Chronic rhinosinusitis (CRS) has been differentiated clinically into CRS without nasal polyps and CRS with nasal polyps, with both forms subjected to glucocorticosteroid and antibiotic treatments and, if not successful, to nasal and sinus surgery tailored to endoscopic and computed tomographic scan findings. The elaboration of endotypes based on patho mechanism involving different immune responses offers new possibilities in terms of prediction of prognosis and risks and sophisticated guidance in personalized pharmacotherapy, surgical approaches, and innovative treatment approaches in the CRS field with various biologics. Surgical approaches can vary from classical functional endoscopic sinus surgery to extended and "reboot" approaches, with the idea to completely remove the dysfunctional and inflamed mucosa and replace it with a newly grown healthy mucosa. [5] Depression is associated with increased symptom burden in the setting of chronic medical conditions. Studies investigating the influence of depression on the symptoms of chronic rhinosinusitis (CRS) are lacking. [6] CRS significantly disturbs the quality of life of its patients [7] i.e. the severity of their condition is similar to the conditions of asthma, cancer or arthritis [8].

Material & Methods

This study was performed during the period from January 2020 to October 2022 in S.C.B medical college and hospital Cuttack. This study encircled 80 patients (52 men and 28 women), aged between 20 to 60 yrs of age referred to the department of Radiodiagnosis for evaluation of MDCT PNS from Dept. of ENT, S.C.B medical college and hospital Cuttack. They were all diagnosed with CRS on

the basis of clinical symptoms according to the guidelines of 2012 EPOS. [9] All the subjects were properly informed and written informed consent was taken. The study was performed on GE Bright speed 16slice MDCT scan machine. Both direct coronal and axial scanning was performed. [10]

Scanning Parameters

140kv, 200mA, .625mm section thickness, 0.625 mm interval, 10 mm beam collimation, spiral pitch factor of 0.5625.

Inclusion Criteria

1. Patient referred from the Dept. Of Ent S.C.B Medical College with provisional diagnosis of chronic rhinosinusitis.
2. Patient with 20 to 60 yrs. of age.

Exclusion Criteria

Patients with

1. Age less than 20 yrs. and more than 60 yrs.
2. Acute sinusitis.
3. Facial trauma.
4. Previous surgery of head and neck.
5. Sinus neoplasm.
6. Pregnant woman.

The present study “Multidetector computed tomography (MDCT) evaluation of anatomical variants of nose and para nasal sinuses in patients with chronic rhinosinusitis” was approved by institutional review board and ethical committee of S.C.B MCH, Cuttack where the study was conducted from September 2018 to October 2020.

Results

Out of 80 patients 52 were men (65%) and 28 were women (35%). In our study the demographic profile shows the most common age group affected to be between 20-25yrs. Out of 80 patients 22 patients (27.5%) were between age group 20-25 years, 15 patients (18.7%) were between age group 26-30 years, 12 patients (15%) were between age group 31-35 years, 4 patients (5%) were between age group 46-50 years, 5 patients (6.2%) were between age group 51-55 years, 7 patients (8.7%) were between age group 56-60 years.

Table 1:- Age wise distribution of study population

Age in yrs	20 - 25	26- 30	31- 35	36- 40	41- 45	46- 50	51- 55	56- 60	Total
No. of patients	22	15	12	7	8	4	5	7	80
Percentage %	27.5	18.7	15	8.7	10	5	6.2	8.7	100%

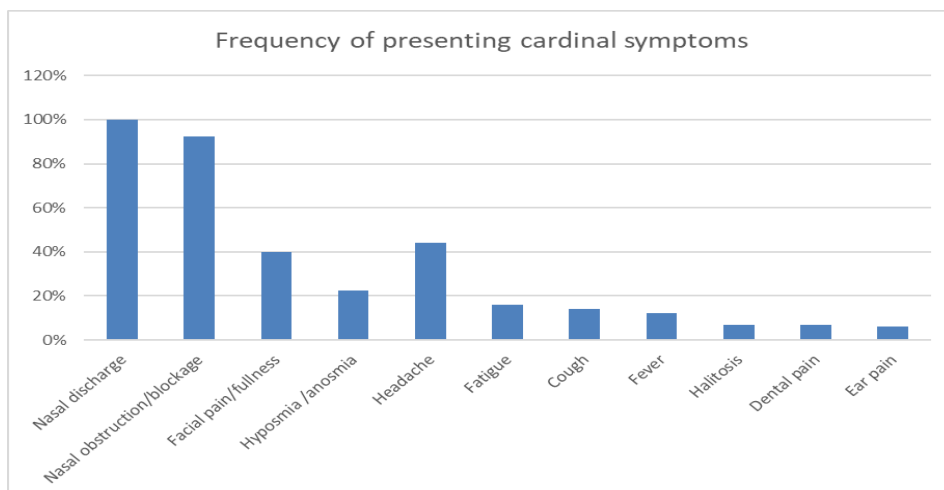
In the present study we observed cardinal symptoms of chronic rhinositis in all 80 patients and the data is shown in table no. 2 is as follows.

Table no. 2:- Frequency and intensity of presenting cardinal symptoms in study population

	Symptoms	% of patients with symptom	Mean	SD
1	Nasal discharge	80(100%)	6.1	2.3
2	Nasal obstruction/blockage	74(92.5%)	4.3	2.1
3	Facial pain/fullness	32(40%)	2.0	1.8
4	Hyposmia /anosmia	18(22.5%)	1.5	1.0
5	Headache	37(44%)	1.8	1.5
6	Fatigue	(16%)	1.1	1.2
7	Cough	(14%)	0.8	1.1
8	Fever	(12%)	0.7	1.0
9	Halitosis	(7%)	0.5	0.9
10	Dental pain	(7%)	0.4	0.8
11	Ear pain	(6%)	0.4	1.0

All 80 patients in our study had more than one cardinal symptom. The most common cardinal symptom noted was nasal discharge. All 80(100%) patients had complained of nasal discharge. About 92.5% patients had complained of nasal obstruction, and 40 % with facial fullness/pain, 22.5% with hyposmia/anosmia and 44 % patients complained about suffering from headache. Along with these cardinal symptoms few minor symptoms were also noted like fatigue in 16%, cough in 14%, fever in 12%, halitosis in 7%, dental pain in 7%, and ear pain in 6% patients.

Chart no. 1:- Showing frequency of presenting cardinal symptoms in study population



Discussion

The anatomy of nose and PNS is very complicated and their anatomical variants are very frequent [10]. To evaluate the normal anatomy, its variant and to diagnose the disease at this region, physical examination and conventional radiographic examinations are not always able to provide sufficient information [11]. MDCT PNS on coronal plane is main methods used to demonstrate the CRS preoperatively. The advantage of this approach for FESS is that; it can provide anatomical and pathological image with same perspective to the surgeon [12].

The unique development of PNS explains for their enormous amount of anatomical variations [13]. Variations in the anatomy of nose and para nasal sinus may cause obstructions and mucous stasis that can lead to CRS [14]. Stammberger et al. [15] proposed that stenosis of the sinus drainage pathway including osteomeatal complex, from either the anatomical configuration or hypertrophied mucosa, can cause obstruction and stagnation of secretions that may become infected or perpetuate infection. Local impairment of mucociliary clearance due to anatomical variants may cause retention of secretions, creating the potential site for infection even without ostial closure [16]. Chronic rhinosinusitis is an ailment that occurs in numerous clinical forms from a relatively harmless condition to the risk of extra and intracranial complications which can put the patients' lives at risk (in case of acute exacerbation of the inflammation). General practitioners and pediatricians (when the disorder is diagnosed on the basis of the symptoms), otorhinolaryngologists, pulmonologists and allergologists, and in case of complications opthalmologists, neuro surgeons and intensive care unit doctors treat the condition [17].

In our study the demographic profile, Table 1 shows the most common age group affected to be between 20-25yrs. Out of 80 CRS patients, 27.5% were between age group 20-25 years and 18.7% were between age group 26-30 years. Among 80 patients enrolled in our study, 65% were male and 35% were female. Similar results were reported in a study by Surapaneni et al (18). All 80 patients in our study had more than one cardinal symptom (Table 2). The most common cardinal symptom noted was nasal discharge. All 80(100%) patients had complained of nasal discharge. About 92% patients had complained of nasal obstruction, and 40 % with facial fullness/pain, 22.5% with hyposmia/anosmia. Minor symptoms noted were headache in 44% subjects' fatigue in 16%, Cough in 14%, Fever in 12%, Hallitosis in 7%, dental pain in 7% and ear pain in 6% of patients.

Conclusion

On the basis of the results of this study, it can be concluded that nasal discharge and nasal congestion are the most frequent symptoms that occur in CRS patients without statistical significance of the frequency of these two symptoms. Nasal discharge is the most intensive symptom in CRS patients and its intensity defines the disorder as a whole. Regardless of their severity, all individual symptoms occurring in CRS patients significantly correlate with the assessment of the disorder as whole.

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