PREDISPOSING FACTORS AND OUTCOMES OF RECURRENT AND CHRONIC SINUSITIS IN PATIENTS PRESENTING TO ENT UNIT REHMAN MEDICAL COLLEGE, PESHAWAR

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ABSTRACT

Introduction: Chronic sinusitis is a persistent sinus infection, where the daily life of an adult is affected which causes them to fall behind in the life. By doing this study we will come to know better treatment options and prevention of recurrent and Chronic sinusitis. To identify the predisposing factors and know the outcomes of chronic sinusitis in patients of Rehman medical institute.

Materials & Methods: A cross-sectional study on 95 patients was conducted in Rehman Medical College, Peshawar, from the period of 1st April 2017 to 30th May 2017 on patients with recurrent and chronic sinusitis presenting to the ENT unit of Rehman medical institute, Peshawar. Data was collected through non-probability consecutive sampling technique. A preformed questionnaire was distributed amongst the patients and filled by the study group. The statistics were analyzed on SPSS Version 17.

Results: The patients included 62 (65.3%) males and 33 (34.7%) females; their ages ranged from 18-32 years, with most cases being 18-27 years (89, 93.7%). Among predisposing factors previous ineffective medications (75%), allergies (61%) and previous use of steroids (28%) and previous surgeries and smoking were identified.

The most frequent symptoms were loss of smell (34.7%), throat pain (29.5%), runny nose (28.4%) and sneezing (28.4%).

The total resolution of symptoms were obtained in loss of taste (74.6%), loss of appetite (72.1%), neurological problems (71.0%) and headache (70.6%).

Conclusions: Ineffective medications and allergies predispose young adults to recurrent and chronic sinusitis resulting in non-resolution of chronic symptoms in about one-fifth of patints.

Keywords: Sinusitis; Hypersensitivity, immediate; Eypersensitivity, delayed; Environmental illness; Smoking.

INTRODUCTION

Chronic Rhinosinusitis (RS) is defined as "persistent sinus inflammation that lasts longer than 8 weeks". Recurrent Rhinosinusitis (RS) is defined as "having three or more episodes of acute sinusitis within 1year".[1] CRS is typically classified clinically into two distinguishable phenotypes: chronic rhinosinusitis without nasal polyposis (CRSsNP) and chronic rhinosinusitis with nasal polyposis (CRSwNP).[2] CRS is estimated to effect 10.9% of the population in Europe with an incidence of 1.13 per 100 person-years.[3-4] Patients with CRS suffer from significantly impaired quality of life including decreased health utility, emotional distress, and decreased physical and social activity with disease-specific expenditures totaling approximately $6 billion annually.[5]

Chronic sinusitis may be noninfectious and related to allergy, cystic fibrosis, gastroesophageal reflux, or exposure to environmental pollutants.[6-7] The early stage of sinusitis is often a viral infection that generally lasts up to 10 days and that completely resolves in 99% of cases. However, a small number of patients may develop a secondary acute bacterial infection that is generally caused by aerobic bacteria (ie, *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis*).[8] The role of bacteria in the pathogenesis of chronic sinusitis is currently being reassessed. Repeated and persistent sinus infections can develop in persons with severe acquired or congenital immunodeficiency states or cystic fibrosis.

Current thinking supports the concept that chronic rhinosinusitis (CRS) is predominantly a multifactorial inflammatory disease. Confounding factors that may contribute to inflammation include the following: Persistent infection (including biofilms and osteitis). Allergy and other immunologic disorders, Intrinsic factors of the upper airway, Super antigens, Colonizing fungi that induce and sustain eosinophilic inflammation, Metabolic abnormalities such as aspirin sensitivity[9-10]

Chronic sinusitis is rarely life threatening, although serious complications can occur because of the proximity to the orbit and cranial cavity. Approximately 75% of all orbital infections are directly related to sinusitis.

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Intracranial complications remain comparatively rare, with 3.7-10% of intracranial infections related to sinusitis.[11]

The number of adults diagnosed with sinusitis are 29.4 million[12]. In a recent study on adults and secondary school students, in London and Lahore, 32% of secondary school children in the London sample suffered rhinitis/rhinosinusitis symptoms (cough was the most significant symptom). A similar prevalence of 30% was found in adults. More than 21% had their quality of life affected by their symptoms and more than 47% took between 2-15 days off school due to symptoms, compared to 25% and 10% respectively in adults. Data analysis from Lahore confirmed that over 25% suffer from rhinitis/rhinosinusitis with significant associated comorbidities. Information regarding the distribution of factors and their outcome can help us with recognizing proper pathophysiology of sinusitis and also can help us with finding better treatment and prevention options. For a better understanding of RS, we compared adults of all age groups with recurrent and chronic RS to help us evaluate our study.

RATIONALE OF STUDY

The occurrence of CRS varies from person to person and region to region depending upon multiple factors, including the life style and environment. Rehman medical Institute (a tertiary care hospital) provide wide range of ENT service to the people of province. However the services and resource management is not based on the spectrum of disease present among the community people, which necessitate a research to be conducted to provide based line information regarding spectrum of predisposing factors and outcomes of recurrent and chronic sinusitis among patients presented to ENT unit of Rehman medical institute. Our research will let us know the main predisposing factors of recurrent and chronic sinusitis, also it will help us know the major outcomes sinusitis. Information regarding the distribution of factors and their outcome can help us with recognizing proper pathophysiology of sinusitis and also can help us with finding better treatment and prevention options.

MATERIALS & METHODS

STUDY DESIGN

A cross sectional: A cross-sectional study on 95 patients was conducted in Rehman Medical College, Peshawar, from the period of 1st April 2017 to 30th May 2017 on patients with recurrent and chronic sinusitis presenting to the ENT unit of Rehman medical institute, Peshawar. Patients presented with acute sinusitis were ignored, undiagnosed chronic and recurrent sinusitis patients were also ignored. The statistics were analyzed on SPSS Version 17. Frequencies were calculated for the qualitative variables like gender, age. Mean and standard deviation were calculated for quantitative variables like age of the patient. Degree and extent of sinusitis was stratified among age, gender to see the effect modifiers. The results were presented as tables and charts. Inclusion criteria consisted of all the recurrent and chronic sinusitis patients willing to filling the questionnaire, exclusion criteria consisted of all the patients below the age of 18 and patients with recurrent acute sinusitis.

The study was approved through DMS. Data was collected through non-probability consecutive sampling technique. A preformed questionnaire was distributed amongst the patients and filled by the study group. Patients were given the questionnaire. To prepare the questionnaire date for the questionnaire was collected from articles and studies done abroad and then compiled into a separate questionnaire. Many sites were consulted for this study. And all the data collected was entered into SPSS version 17.

RESULTS

A total of 95 patients were chosen for this study. Out of which, The Table 1 consists of predisposing factors of recurrent and chronic sinusitis among different age groups. The patients that went through nasal surgery were 28%, those using oral drugs were 75%, intranasal spray were 35%, allergic patients were 61% and smokers were 28%.

Table 2 shows the grades and outcomes of recur-

Table1: Attributes in clinical history in different age groups.

Age Groups (years)	Total (n)	Nasal surgery	Oral drugs for sinusitis	Being asthmatic	Intranasal drugs/ sprays	Allergies	Smoking	Previous diagnosis as sinusitis
18-22	62	18 (29%)	43 (69%)	10 (16%)	26 (42%)	33 (53%)	13 (21%)	62 (100%)
23-27	27	08 (30%)	22 (82%)	05 (19%)	07 (26)	21 (78%)	11 (41%)	27 (100%)
28-32	06	01 (17%)	06 100%)	00 (0%)	00 (0%)	04 (83%)	03 (50%)	06 (100%)
Total:	95	27 (28%)	71 (75%)	15 (16%)	33 (35%)	58 (61%)	27 (28%)	95 (100%)

Table 2: Grading and outcomes of presenting complaints in patients (n=95).

Symptoms	Grades f (%)					Outcome f (%)			
	1	2	3	4	5	R	NR	W	L
Headache	27 (28.4)	23 (24.2)	24 (25.3)	16 (16.8)	05 (5.3)	48 (70.6)	09 (13.2)	5 (7.4)	6 (8.8)
Facial Pain	24 (25.3)	29 (30.5)	29 (30.5)	11 (11.6)	02 (2.1)	46 (64.8)	13 (18.3)	4 (5.6)	8 (11.2)
Post Nasal drip	28 (29.5)	13 (13.7)	32 (33.7)	19 (20.0)	03 (3.2)	37 (55.2)	12 (17.9)	6 (8.9)	12 (18.0)
Difficulty Breathing	24 (25.3)	31 (32.6)	19 (20.0)	16 (16.8)	05 (5.3)	41 (57.8)	12 (16.9)	4 (5.6)	14 (19.7)
Loss of smell	33 (34.7)	17 (17.9)	20 (21.1)	19 (20.0)	08 (8.4)	35 (56.4)	10 (16.1)	2 (3.2)	15 (24.1)
Sneezing	17 (17.9)	25 (26.3)	26 (27.4)	19 (20.0)	08 (8.4)	49 (62.8)	12 (15.4)	1 (1.3)	16 (20.5)
Coughing	29 (30.5)	26 (27.4)	21 (22.1)	16 (16.8)	03 (3.2)	36 (54.5)	11 (16.7)	5 (7.6)	14 (21.2)
Fatigue	17 (17.9)	27 (28.4)	30 (31.6)	18 (18.9)	03 (3.2)	53 (67.9)	7 (9.0)	5 (6.4)	13 (16.7)
Throat Pain	24 (25.3)	20 (21.1)	23 (24.2)	25 (26.3)	03 (3.2)	47 (66.3)	6 (7.7)	4 (5.1)	14 (17.9)
Lack of sleep	31 (32.6)	19 (20.0)	22 (23.2)	16 (16.8)	07 (7.4)	39 (60.9)	8 (12.5)	5 (7.8)	12 (18.8)
Runny nose	16 (16.8)	24 (25.3)	22 (23.2)	23 (24.2)	10 (10.5)	49 (62.0)	9 (11.4)	3 (3.8)	18 (22.8)
Thick Nasal Discharge	19 (20.0)	30 (31.6)	27 (28.4)	14 (14.7)	05 (5.8)	50 (65.8)	12 (15.8)	3 (3.9)	11 (14.5)
Restless/ Irritable/ annoyed	19 (20.0)	24 (25.3)	29 (30.5)	18 (18.9)	05 (5.3)	51 (67.1)	12 (15.8)	4 (5.3)	9 (11.8)
Thick sputum production	25 (26.3)	21 (22.1)	28 (29.5)	16 (16.8)	05 (5.3)	45 (64.3)	10 (14.3)	3 (4.3)	12 (17.1)
Loss of taste	36 (37.9)	24 (25.3)	24 (25.3)	05 (5.3)	02 (2.1)	44 (74.6)	8 (13.5)	1 (1.7)	6 (10.2)
Loss of appetite	34 (35.8	24 (25.3)	24 (25.3)	11 (11.6)	02 (2.1	44 (72.1)	8 (13.1)	2 (3.3)	7 (11.5)
Neurological Problem	64 (67.4)	13 (13.7)	11 (11.6)	06 (6.3)	01 (1.1)	22 (71.0)	3 (9.7)	-	6 (19.3)

Grading 1-5 code: 1= no symptoms, 2=mild symptom, 3=moderate symptom, 4= severe symptom, 5=very severe symptoms. Outcome code : R= resolved, NR=not resolved, W=worsened, L=lessened.

Table 3: Symptoms of recurrent and chronic Sinusitis.

Age groups (years)	Total (n)	Head-ache	Facial pain	Post-nasal drip	Diffi-culty in breath-ing	Loss of smell	Sneez-ing	Cough	Fatigue	Throat pain	Sleep-less-ness	Runny nose	Irrita-bility & rest-less-ness	Spu-tum	Loss of taste	Loss of appiite	Neuro-logical symp-toms
18-22	62	42 68%	50 81%	43 69%	50 81%	45 73%	52 84%	45 73%	51 82%	50 81%	41 61%	51 82%	52 84%	46 74%	41 66%	42 68%	21 34%
23-27	27	23 85%	19 70%	19 70%	18 67%	14 52%	22 81%	17 63%	22 61%	18 67%	19 70%	23 85%	19 70%	18 67%	14 52%	15 56%	08 30%
27-32	06	03 50%	02 33%	05 83%	03 50%	03 50%	04 67%	04 67%	05 83%	03 50%	04 67%	05 83%	05 83%	06 100%	05 83%	04 67%	02 33%
Total	95	68 72%	71 75%	67 71%	71 75%	62 65%	78 82%	64 67%	78 82%	71 75%	64 67%	79 83%	76 80%	70 74%	60 63%	61 64%	31 33%

rent and chronic sinusitis. Each symptom was graded according to the intensity of the symptoms and the outcomes. Regarding the intensity of symptoms, the nasal complaints of loss of smell (34.7%),throat pain (29.5%) runny nose (28.4%) and sneezing (28.4%) showed the highest severity scores (combined severe and very severe categories). Other symptoms that score high were restless/irritability (23.5%), fatigue (21.1%). Regarding the outcomes of treatment the most favorable outcome of resolution was seen in loss of taste (74.6%),loss of appetite (72.1%), neurological problems (71.0%); headache was resolved in 70.6%.

Failure of resolution was seen in facial pain (18.3%), post nasal drip (17.9%) and difficulty breathing (16.9%),coughing (16.7%) and loss of smell (16.1%).

Table 3 shows the outcomes of recurrent and chronic sinusitis by patients' age group. The younger age group of 18-22 years shows the maximum number of symptomatic patients (62, 65.3%), of which 84% had sneezing and irritability as the major symptom, followed by fatigue (82%) and runny nose (82%) and facial pain (81%).

DISCUSSION

Limitations

Due to its limitations this study is supposed to be repeated once more, the sample size taken cannot possibly represent the whole population, but, again, bearing in mind the supporting studies conducted and the data and findings published therein. However, as scientists, the first suggestion this study should elicit, is to follow up with further research on a larger scale, spanning more settings and covering a lot more study participants, to see how prevalent the problem is. Because currently only limited patients were selected and each group showed a different consequence of sinusitis.

According to our study, which consisted of a sample size of 95 patients, and was conducted on predisposing factors and outcomes of sinusitis. It was found that asthma and allergy were the main predisposing factors, and fatigue, loss of smell, sneezing and throat pain were the main symptoms. In our study patients with sinusitis having allergy as a predisposing factor were about (53%) from age group 18-22 years, (77%) in age group 23-27 years and (83%) in age group 28-32 . A similar retrospective study on sinus abnormalities in 1,120 patients (from 2-87 years of age), thickening of the sinus mucosa was more commonly found in sinusitis patients during July, August, September, and December, months in which pollen, mold, and viral epidemics are prominent. A review of patients (4-83 years of age) who had surgery to treat their chronic sinus conditions revealed that those with seasonal allergy and nasal polyps are more likely to experience a recurrence of their sinusitis.[13] In our study a total of (16%) Patients had asthma as a predisposing factor,

which contradicted other researches that were done before in which, as many as 80%-90% of children and adolescents with asthma have nasal symptoms, and half of all patients with asthma have radiographic evidence of RS. Several studies have shown that 40%-60% of children with asthma have chronic RS.[14,15,16]. The outcome of cough in our patient was a total of (45.5%). In a study conducted in London, 30% Had cough as the most significant symptom.[12] In (47.4%) patients sinusitis caused headache, in another study (28.9%) patients had headache due to sinusitis. In a study conducted it was seen that majority of the cases of headache due to rhinogenic causes were males (54%) in the age group of 11-30 years[17]

We also found that that (75%) of patients used medications that proved to be ineffective. Thus, in our study loss of taste, loss of appetite and headache were the main symptoms resolved. And in our study facial pain was not resolved in (18.3%) people. Thus these were the new studies that we came across in our research.

CONCLUSION

This study showed that dust allergies, asthma and smoking are the main predisposing factors of sinusitis, and sneezing, runny nose, fatigue, irritability and runny nose to be the major outcomes of recurrent and chronic sinusitis. Then link between allergies and recurrent and chronic sinusitis showed a causal link.

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