



CLINICO-EPIDEMIO-RADIOLOGICAL STUDY OF CHRONIC RHINOSINUSITIS IN WESTERN MAHARASHTRA

KEY WORDS

Computer Assisted Instruction, Self Instruction Module, Achievement, Economics and Students' Performance

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Chronic rhinosinusitis (CRS) affects 1 in 8 people in India; about 5-15% of urban population. The prevalence of sinusitis (146/1000 population) has been reported to exceed that of any other chronic condition and is apparently on the increase. Sinusitis is a common health problem that leads to frequent visits to primary care physicians and to ear, nose and throat specialists in all over the world. It contributes to a significant amount of health care expenditure due to direct costs arising from physician visits and antibiotics, as well as indirect costs related to missed days at work and a general loss of productivity due to a decrease in life-quality of those affected.

Patients with chronic rhinosinusitis also suffer from a poor quality of life and the disease is often associated with other co-morbid conditions such as asthma, eczema and otitis media. A better understanding of Regional variations in Clinico-Epidemiological features of chronic rhinosinusitis is essential in order to develop cost-effective treatment protocols.

Diagnosis

As per European position paper on rhinosinusitis and nasal polyps, CRS is defined as inflammation of nose and paranasal sinuses with - presence of two or more symptoms one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior /posterior nasal drip), facial pain and pressure, reduction or loss of smell for >12 weeks.

-Diagnosis of CRS requires in addition requires either : endoscopic signs of polyps; oedema or mucopurulent discharge; and / or - CT PNS showing mucosal changes within osteomeatal complex and / or sinuses.

Plain CT PNS (3 mm coronal sections) correlates fairly well with the extent of disease. It approximates closest to the surgical field and best demonstrates the osteomeatal complex and the skull base . When pathology is present in posterior ethmoids and sphenoid axial views are also required to optimally show optic nerve and carotid artery. Reconstructed sagittals are useful in evaluating the frontal recess. The timing of scan should take into account the effect of common cold which produces sinus opacification in 87 % of sinuses and persistence of changes on imaging many weeks after bacterial infection despite clinical resolution.

This Prospective Descriptive study was done to revisit the epidemiological data related to CRS (as compared to data available in literature) at a tertiary care hospital in western Maharashtra (India).

STAGING OF RHINOSINUSITIS

For valid assessment of results following various therapies for chronic rhinosinusitis, the Lund and Mackay staging system was devised. The Lund and Mackay staging system : symptom score (visual analogue method):

SYMPTOM (Score 1 – 10)	Baseline (pre R)	3 months (post R1)	6 months (post R2)	1 year (postR3)	Avg. post R
Facial pain					

Nasal blockage					
Nasal discharge					
anosmia					
Overall discomfort					
Total points each visit					

(0, symptom not present; 0-10, degree of symptom severity, with 10 indicating greatest severity)

The Lund and Mackay radiologic staging system:

Sinus system		Left	Right
Maxillary	(0 / 1 / 2)		
Anterior ethmoids	(0 / 1 / 2)		
Posterior ethmoids	(0 / 1 / 2)		
Sphenoid	(0 / 1 / 2)		
Frontal	(0 / 1 / 2)		
Osteomeatal complex	(0 / 2)		
Total points			

(0, no abnormalities; 1, partial opacification; 2, total opacification)

High Resolution Computed Tomography (HRCT PNS scan) of Paranasal sinuses is the Radiological Investigation of Choice today because the endoscopic sinus surgery requires greater anatomic precision. The detailed anatomy of the osteomeatal complex as displayed by CT scan acts as a roadmap for surgeons prior to endoscopic sinus surgery.

Stammberger proposed that stenosis of the osteomeatal complex, from either the anatomical configuration or hypertrophied mucosa, can cause obstruction and stagnation of secretions that may become infected or perpetuate infection.

The posterior ethmoids were involved in 66%, maxillary antra in 50%, frontal sinuses in 32% and sphenoids in 18%. The extent of involvement reported by other authors was also in the same range. Thus these findings support the contention that obstruction of the narrow drainage pathways will lead to subsequent sinus inflammation. Computed Tomography of the paranasal sinuses has improved the visualisation of paranasal sinus anatomy and has allowed greater accuracy in evaluating paranasal sinus disease. It evaluates the osteomeatal complex anatomy which is not possible with plain radiographs. Anatomical variations studied on CT Scan are found to block the OMC and cause chronic sinusitis. The blockage in the OMC leads to impaired drainage of maxillary, frontal and anterior ethmoid thus causing chronic sinusitis. Thus, this study has re-emphasized the concept that Osteomeatal complex is the key factor in the causation of chronic sinusitis. Removal of disease in Osteomeatal complex region is the basic principle of FESS which is best appreciated on CT Scan.

1) Age distribution of cases:

Majority (84%) of patients were of the age between 20 – 40 years, comprising the productive sector of society. Hence, the cost bearing of CRS in terms of loss of work days and, in turn, loss of productivity to the society is large. (Figure no.1)

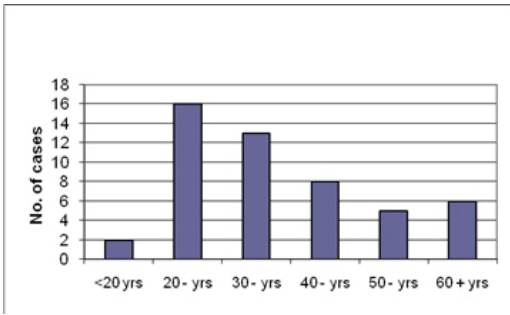


Figure no. 1: Age distribution of cases of CRS

2) Sex distribution:

Majority (62%) of patients with CRS were males (31 males; 19 females) (Figure no.2)

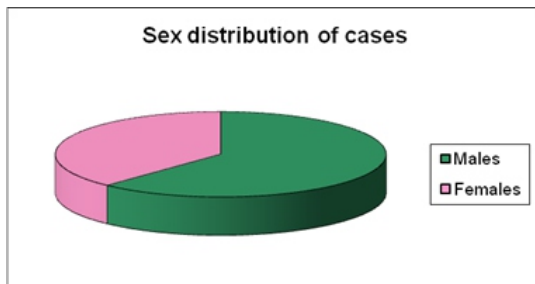


Figure No. 2: sex distribution of cases of CRS

3) Incidence of involvement of Subsites in CRS:

RADIOLOGIC STAGING:	No	Yes
MAXILLARY		
RT	5	45
LT	6	44
ANTERIOR ETHMOID		
RT	14	36
LT	14	36
POSTERIOR ETHMOID		
RT	18	32
LT	18	32
SPHENOID		
RT	25	25
LT	25	25
FRONTAL		
RT	21	29
LT	28	22
OMC BLOCKADE		
RT	9	41
LT	12	38

Table 1: incidence of involvement of various paranasal sinuses in CRS as per CT PNS

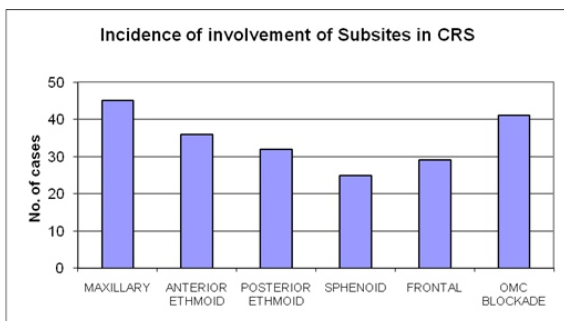


Figure 3: Incidence of involvement of Subsites in CRS

Thus, Maxillary sinus was most commonly involved in CRS (90%), followed by osteomeatal complex blockade and involvement of anterior ethmoid air cells.

If a therapy giving >50% relief is considered as significant, the following results are obtained:

In group (A+B), both medical and surgical treatment are equally effective. In group (C+D), medical treatment is much less effective than surgical treatment. Patients with higher Absolute eosinophil count, had poor response to therapy, as assessed on Visual analogue scale.

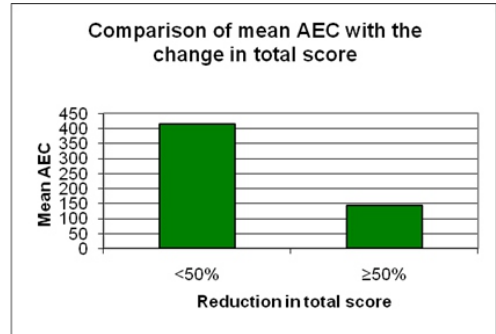


Figure 11: Association of mean Absolute Eosinophil Count with reduction in symptom score

DISCUSSION

Majority (84%) of patients were of the age between 20 – 40 years, comprising the productive sector of society. Hence, the cost bearing of CRS in terms of work days and, in turn, loss of productivity to the society is large.

Majority (62%) of patients with CRS were males (31 males; 19 females). Hence, again the loss of productivity in a male dominated society is large.

Patients with higher Absolute eosinophil count, had poor response to therapy, as assessed on Visual analogue scale. This factor helps to prevent recurrence after FESS for CRS by keeping the patient on medical line of treatment for longer duration.

Maxillary sinus was most commonly involved in CRS (90%), followed by osteomeatal complex blockade and involvement of anterior ethmoid air cells. Hence, messerklinger technique of clearing & widening the sinus ostia from anterior to posterior seems more rational than Wigand.

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