

Evaluation of the Microbiology of Chronic Maxillary Sinusitis

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The effect of Chronic Maxillary Sinusitis and its long term morbidity had been discussed a lot.. Chronic sinusitis is defined as if sinus infection persisted more then 12 weeks. Most of the clinician managed the patient with broad-spectrum antibiotics without advising culture & sensitivity of fluid. The outcome of such treatment is beneficial initially but later on due to recurrent infection patients don't response to such treatment. The factors attributed are alternation in pathology and chronicity of lining mucosa. In this study there were 45 patients, 33 had bilateral disease so 78 wash out were performed. The diagnosis of chronic maxillary sinusitis was made on the basis of clinical assessment and by doing X-Ray Para Nasal sinuses (water's view). All patients were selected after certain criteria and antral wash out performed. After culture sensitivity of the lavage material antibiotic was given for 2 weeks with consultation of Bacteriologist. The outcome of this regime and further evaluation of the patient is discussed.

Key Words: Chronic Maxillary Sinusitis, Sinus Irrigation/Aspiration, Microbiology

Chronic Maxillary sinusitis is polymicrobial infection. The traditional treatment of this condition is irrigation and removal of inflammatory product. Usually after washout broad-spectrum antibiotic are advised to cover both aerobic and anaerobic microorganism. Some times patient did not response to these drugs, which may be due to resistance to those drugs or due to extensive disease⁴. In our study on 45 cases we collected the product of washout and submit for culture sensitivity and further treatment started on the sensitivity reports. The patients who did not response to such measures were offered radical surgery.

Patients and methods

This study was carried out at Sir Ganga Ram Hospital and Jinnah Hospital Lahore during the period of June 1998 to March 2000. Forty five patients were included in the study out of which 30 male and 15 female, the minimum age was 18 and maximum 55 years. The mean age group was 33 years (Table 1)

Table 1. Age and sex (n=45)

Minimum Age	18 Years
Maximum Age	55 years
Mean Age	33 years
Male	30
Female	15
Male to Female	2 = 1

Patients were selected randomly from referral cases to Senior Registrar in out patient department.

All patients had symptoms consistent with chronic maxillary sinusitis i.e post nasal discharge, nasal obstruction, headache, sore throat, cough, hyposmia, foul odour (Table 2).

All the patients included in the study had received various types of antibiotics either inadequate doses or for inappropriate duration. The criteria of exclusion from study is mentioned in Table 3.

Table 2. Symptomatology of patients (n=45)

Symptoms	n=	%age
Nasal Obstruction	35	77
Post Nasal Discharge	38	84
Headache	16	35
Sore Throat	28	62
Cough	17	37
Hyposmia	2	4
Foul Odour	2	4

Table 3. Criteria for exclusion

Very old and very young patient
Patient with teeth infection.
Patient with another pathology in the nose e.g., nasal allergy, nasal polyp deflected nasal septum, fungal infection.
Systemic illness e.g., diabetex, immunodeficient or immunocompromised.
Mucocillary dysfunction e.g. Kartagener syndrome, young syndrome.
Racial nose with anatomical abnormalities e.g. flats nose.
Patient presenting with tumours.
Past history of sinus surgery/trauma.
Recent use of antibiotics

After routine Ear, Nose & Throat examination including anterior and posterior rhinoscopy, X-Ray of paranasal Sinuses occipito-mental view, (water view) was done. Depending on the symptomatology with radiological findings, Patient were kept for antral wash out. Radiological criteria for labeling chronic inflammation was mucosal thickening, air fluid level or complete opacification of the antrum. Mucosal thickening more than 5mm is considered to be involved in chronic inflammation. Antral lavage was done with surface anesthesia i.e 4% xylocaine with adrenaline 1:100,000 after keeping packs inferior meatus soaked in this solution for 10 minutes. Trocar and canula was inserted in the sinus through inferior meatus and irrigated with 50 c.c. Syringe. Normal saline was used for lavage.

Total numbers of patients were 45, out of which 33 had bilateral disease. It meant we did 78 antral wash out. There was no marked complication except in two patients who had mild bleeding which was stopped by keeping packs in the inferior meatus for six hours. 4 patients complained of pain at the face which was due to blocked ostium. The material obtained from wash out was sent immediately for culture and sensitivity. Patient was given antibiotics after the advice of Bacteriologist, which depend upon the results of culture and sensitivity.

Table 4. Result of wash out. (n=78)

Antral Wash-out	Results	Consistency
50	+	Mucopurulent
10	+	Frank Pus
18	-	Mucoid discharge

Results

Seventy eight wash out done out of which 10 had frank pus, 18 had mucoid discharge and 50 had mucopurulent discharge (Table 4). All wash out specimens were sent for culture and sensitivity. Out of 78, twenty wash out has no growth. Multiple organisms were cultured from 37 wash out. Staphylococcus Aurea was most common isolate 30%. Streptococcus pyogens was next common organism 26%. Other organisms were klebsiella pneumonia, E. Coli and Pseudomonas.

Patients were given antibiotics after culture and sensitivity, most of them had sensitivity to clarithromycin and Augmentin. 90% patients improve after giving drugs as a result of culture sensitivity

Discussion

In quiescent state chronic sinus disease is due to inadequate maxillary function in obstructed drainage. Mostly, it is polymicrobial infection. Pathogenic organism mingled with various non-virulent or opportunistic ones and a high percentage of anaerobes. Staph aureous is more common in acute sinusitis and fungi are increasingly reported in cases resistant to multiple antibiotics. Pseudomonas is the predominant pathogens in patients with polypoidal nasal musosa^{5,6}.

On culture & sensitivity Staphylococcus aureus was found resistant to most of the antibiotic like Erthyromycin, Ampicillin, sulphonamide, clindamycin and first Generation Cephalosporin.

The most common antibiotic effective in these cases are either Augmentin 625 mg 3 time a day for 10 days or combination of Ampicillin (500 mg 6 hourly) with Flagyl (400 mg tid for 10 days). For Gram negative organism pseudomonas, and Inj. Gentamycin was given in appropriate doses.

Review of different studies revealed different pattern of Bacteriology, which may be due to patient presentation and immune status. In the study of Brook et al⁷, majority of organisms are aerobic Bacteria (88%) in addition to

staphylococcus aureus and Streptococci. The study of Almodorig et al⁸ conclude staphylococcus coagulase negative 22% along with staph Aureus, streptococcus pneumonia, diphtheroid bacillus and anaerobic bacteria.

The bacterial pattern shown from aspirate and by doing biopsy concludes stap Aureus was the main organism responsible for chronic maxillary sinusitis (Hoyt et al)⁹. These finding are consistent with the results of our study, which demonstrated a preponderance of staph aureus (Table 5)

Table 5. Bacteria isolated in 45 patients (78 lavage) with Chronic Maxillary sinusitis

Staphylococcus Aureus	30
Streptococcus pyogens	26
Pseudomonas	5
Klebsiella-Pneumonia	6
Escherchia-Coli	5
Bacteroids	31
No Growth	20
Total	130

Conclusion

Our study concludes that aerobic rather than anaerobic bacteria are more common organism in chronic maxillary sinusitis. The use of antibiotic after culture sensitivity is more effective than use of antibiotics without any culture and sensitivity. The percentage of cure after simple lavage and antibiotics really helped to get rid off of this condition. In this way these patients had, no indication for radical surgery.

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