

Treatment and Prevention of Sinusitis

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Abstract

Sinusitis is inflammation of the sinuses, which are air-filled cavities in the skull. This inflammation leads to blockade of the normal sinus drainage pathways which in turn leads to mucus retention, hypoxia, decreased mucociliary clearance, and predisposition to bacterial growth. It is characterized by headache, postnasal drip, face and eye pain, pain over the bridge of the nose, sometimes tinged with blood (as in acute sinusitis), stuffy or runny nose. Pharmacologic treatment for sinusitis is antibiotics, antihistamines, analgesics, corticosteroids etc. Antibiotics are first line therapy for sinusitis. Antihistamines, analgesics and corticosteroids are used as adjuncts to reduce inflammation, pain and for decongestion respectively. Infection and allergy (dust and smoke allergy) may be risk factors in sinusitis patients and need to be managed with simplified but effective pharmacological treatment regimen. This study was carried out on 40 patients of sinusitis in Mayo Hospital. The objective of study was to present the patterns of the drug prescribed in patients with sinusitis, age factor, allergy, and the outcomes of treatment. Our study indicates that it appears almost equally in both sexes, teenagers are mostly affected by sinusitis, initially it is started as acute then becomes chronic. On the latter, dust and smoke allergy affect some people suffering from sinusitis, at Mayo Hospital commonly prescribed antibiotics were cephalosporin in combination with antihistamine and analgesics.

Key Words; Sinusitis, Management of Sinusitis, Antibiotics Therapy

INTRODUCTION

Sinusitis is a swelling of the inner lining of the sinuses. The sinuses are the spaces between the bones in the face where air passes and where a fluid called mucus drains into the nose. In sinusitis, the swelling blocks the openings in the sinuses through which mucus drains into the nose. When mucus cannot drain properly, the pressure of the blocked fluid inside the sinuses can be painful.

Sinusitis can be acute (going on less than four weeks), sub acute (4–8 weeks) or chronic (going on for 8 weeks or more). All three types of sinusitis have similar symptoms, and are thus often difficult to distinguish.

Birt stated that otolaryngologists see scores of patients with vague discomfort in the forehead, between the eyes, and across the nose and cheeks. "Patients invariably ascribe their symptoms to sinus disease, and are later surprised to discover that they are not infected. In fact, chronic sinusitis is not particularly common, and many headache patients with autonomic features will probably have muscle tension headaches or migraines."^[1]

Sinus headache is commonly diagnosed, and patients with headache often cite sinus pain and pressure as a cause of their headaches. A high frequency of diagnosis of sinus

headache, which specialists consider to be relatively rare, among patients meeting International Headache Society (IHS) diagnostic criteria for migraine raises the possibility that migraine and perhaps other headache types are sometimes mistaken for sinus headache.^[2]

In some instances, chronic maxillary atelectasis can present with enophthalmos secondary to collapse of the maxillary sinus. For reasons that are unclear, the sinus component of the disease remains asymptomatic and is discovered only after thorough evaluation of the enophthalmos.^[3] Isolated sphenoid sinusitis is often misdiagnosed because of its rarity and varied clinical presentation. Presentation is often both subtle and suggestive of other intracranial etiologic sites, as determined by the anatomic relationships of the sphenoid sinus.^[4]

Sinusitis is among the most commonly encountered diseases of childhood and has been the major area of interest for many otolaryngologists, allergists, and pediatricians. Allergies and viral upper respiratory infections are among the most common predisposing factors of sinus disease. Every child with sinusitis is a candidate for an allergy evaluation.^[5]

Historically mistaken for a paranasal sinus tumor, allergic fungal sinusitis (AFS) now is believed to be an allergic reaction to aerosolized environmental fungi, usually of the dematiaceous species, in an immunocompetent host. This is in contrast to invasive fungal infections that affect immunocompromised hosts, such as patients with diabetes mellitus and patients with AIDS. Most patients with allergic fungal sinusitis (AFS) have a history of allergic rhinitis, and the exact timing of allergic fungal sinusitis (AFS) development can be difficult to discern. Thick fungal debris and mucin are developed in the sinus cavities and must be surgically removed so that the inciting allergen is no longer present. Recurrence is not uncommon once the disease is removed. Anti-inflammatory medical therapy and immunotherapy are being employed to help prevent recurrence^[6]

The impact of tobacco smoke on disorders of the nose and paranasal sinuses is less well understood, although there is growing evidence that such exposure can have a significant impact on nasal and sinus function. A comprehensive review of the literature reveals that tobacco smoking is associated with acute and chronic rhinitis, but may actually be negatively correlated with the development of allergic rhinitis. In those patients with allergies, nasal and sinus symptoms may be exacerbated by tobacco smoking.^[7]

Subdural empyema is a life-threatening complication of paranasal sinusitis, otitis media, or mastoiditis. It is a collection of purulent material between the dura mater and the arachnoid mater. The classic clinical syndrome is characterized by acute febrile illness that is punctuated by rapid, progressive neurologic deterioration and, if left untreated it will eventually lead to coma with fatal outcome. High-resolution, contrast-enhanced CT scanning has revolutionized the diagnosis of subdural empyema. Surgical evacuation of subdural empyema and aggressive management with antibiotics for a period of 3-6 weeks with close monitoring of clinical status will reduce the mortality and results in good outcome. We report a case and review the relevant literature.^[8]

Diagnostic criteria for allergic fungal sinusitis have not been established, and clinical information consists primarily of isolated case reports. Proposed five diagnostic criteria for allergic fungal sinusitis including: the demonstration of the characteristic eosinophil-rich allergic mucin visually or histopathologically, a positive fungal stain or culture from the sinus at surgery, and the absence of immunodeficiency or diabetes.^[9]

The presence of purulent secretions has the highest positive predictive value for clinically diagnosing sinusitis. The two modalities most commonly used include the plain radiograph and CT scan. Plain radiography does not adequately represent the individual ethmoid air cells, the extent of mucosal thickening in chronic sinusitis, or visualization of the ostiomeatal complex. Magnetic resonance imaging can be considered for evaluation of suspected tumors but is not recommended for acute sinusitis because it does not distinguish air from bone. For these reasons, CT scanning of the sinuses is the imaging procedure of choice^[10]

Fifty-nine patients with acute or chronic sinusitis were randomly assigned to receive, in double-blind fashion, either bromelain (Ananase; 2 tablets, 4 times per day for 6 days) or placebo. Conventional therapy, including antibiotics, decongestants, or both, was also given. Sixty-nine percent of those receiving bromelain had an excellent response, compared with 23% of those receiving placebo. Bromelain appeared to produce improvements in nasal mucosal inflammation and edema, nasal discharge, and breathing difficulty^[11]

It was a retrospective study relies on data on exposures or outcomes that have been collected through medical records.

MATERIAL AND METHOD

This study was conducted at Mayo Hospital. Basic aim was to analyze that what type of treatment regimen practiced in management of sinusitis. For this purpose medical records of 40 patients were studied and patient histories were taken. Patients were taken from Mayo Hospital.

RESULTS

Patient included in our study were age group of 10-50 years results were designed on the basis of these parameters ;name, age ,sex ,family history ,allergy, and treatment.Patient was receiving following treatment regimen. Antibiotics Antihistamines and Result, conclusion and recommendations were conducted on the basis of this study.Study was carried out on the basis of Performa.

95% cases has chronic sinusitis and 5% cases has acute sinusitis(Fig 1). In Study population of male were 47% and female were 52%(Fig 2) 40% from age of 10-20 years, 30% of 21-30 years, 17%cases of 31-40 years, 12%cases of 41-50years were observed in the study. (Fig 3)Dust allergy is contributed more than the smoke allergy(Fig 4)

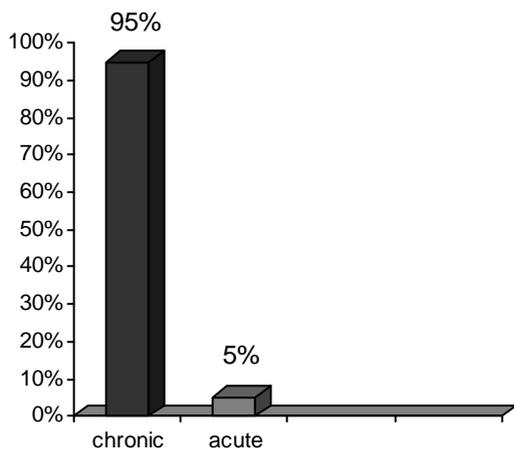


Fig.1 : Types of sinusitis N=40

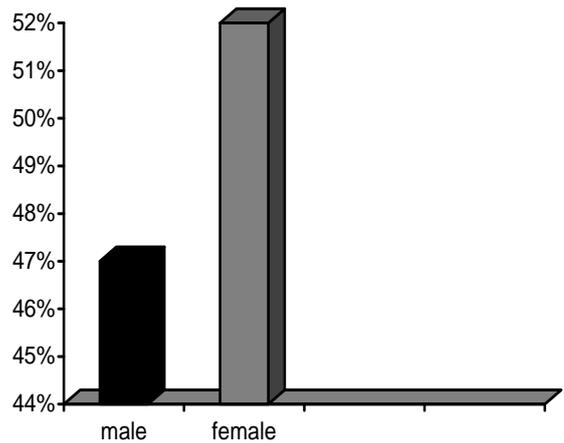


Fig.2 Gender group N=40

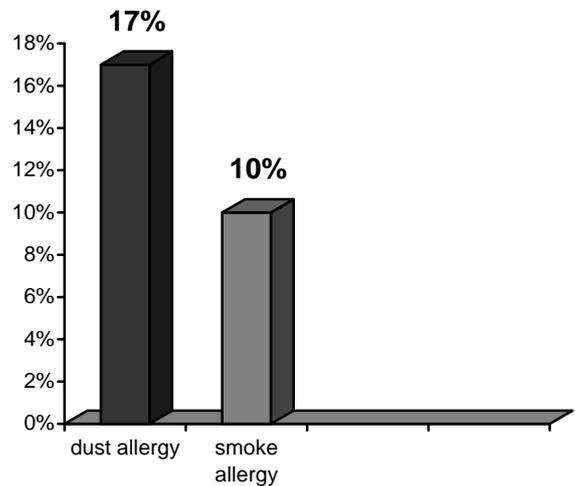


Fig.4 Effect of allergy (dust and smoke)N=40

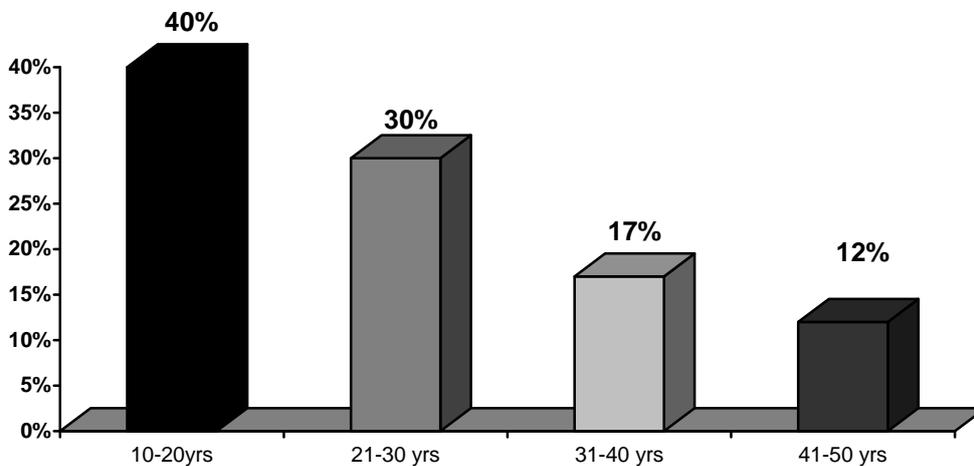


Fig.3 Age group N=40

Fig.5 Treatment of sinusitis N=40

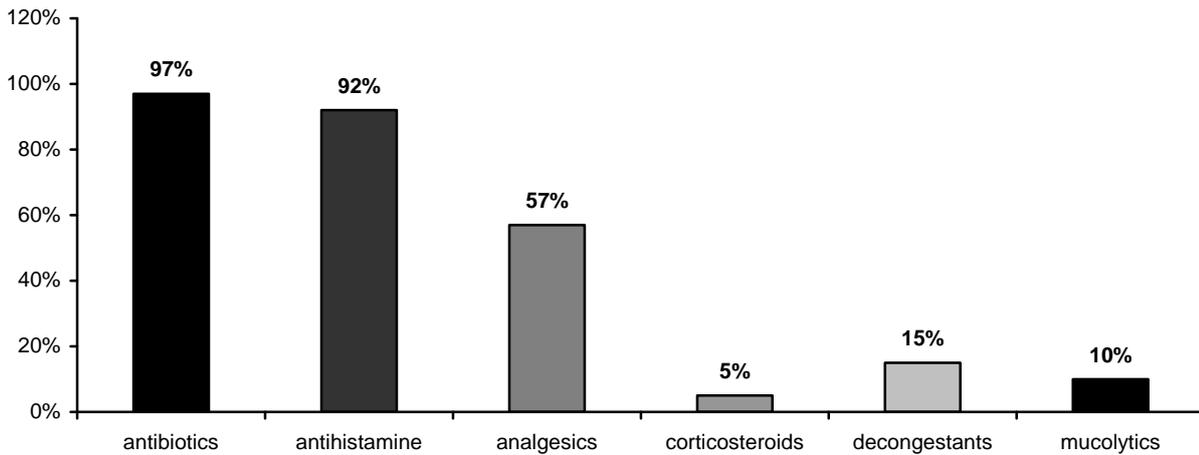
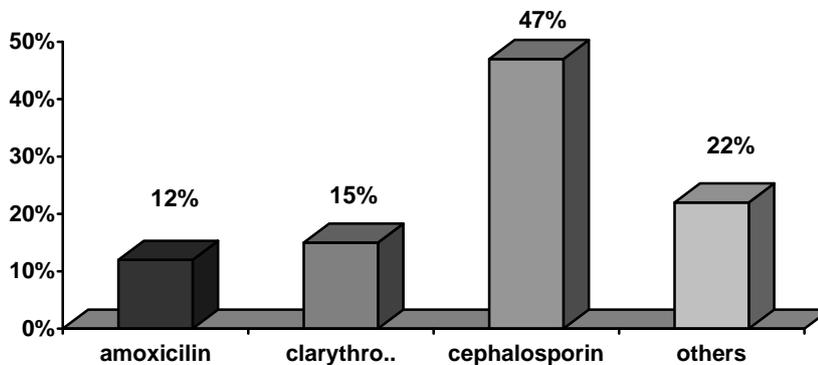


Fig.6 Antibiotics used N=40



Medication used are antibiotics 97%, antihistamines 92%, analgesics 57%, corticosteroids 5%, decongestants 15%, and mucolytics. (Fig 5) Antibiotics used are amoxicillin 12%, clarythromycin 15%, and cephalosporin 47% and others 22% (Fig 6)

Cephalosporin used were cefuroxime 27% and cefixime 20% (Fig 7) Antihistamine used were fexofenadine 40%, loratidine 15%, and citrizine 22% and Loratidine 15%

Fig.7 Cephalosporin used N=40

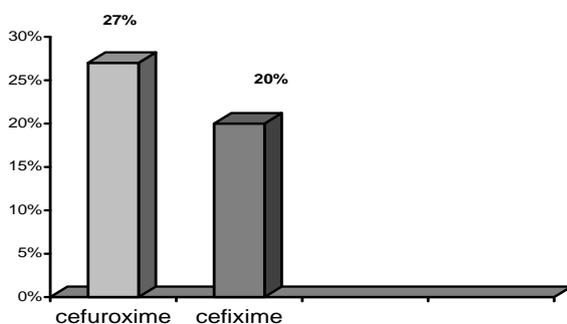


Fig.8 Antihistamines used N=40

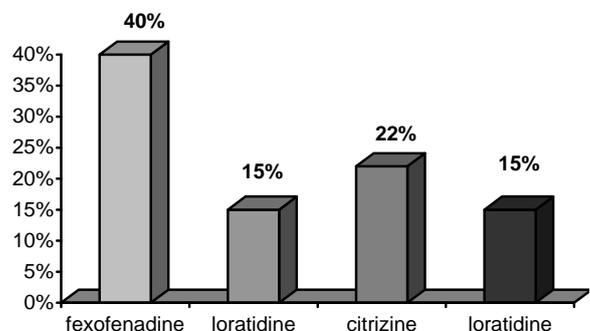
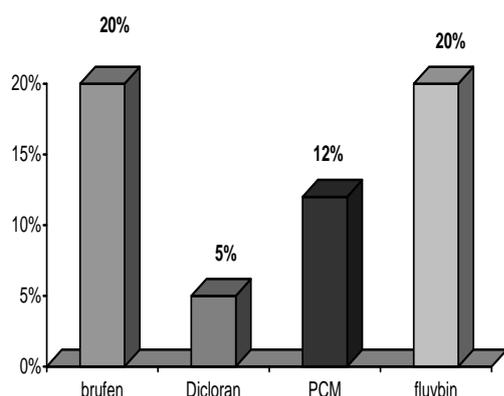


Fig.9 Analgesics used N=40

Analgesics used in the study are brufen 20%, dicloran 5%, paracetamol 12%, and fluvbin 20%

DISCUSSION AND CONCLUSION

According to my study at Mayo hospital total 40 cases of sinusitis in which there were 19(47%) male cases and 21 (53%) female cases and this may be due to more female would be reported at that time. Age group in sinusitis patients, in 10-20 years age 40%(16) cases, 21-30 years age 30%(12) cases, 31-40 years 17% (7) cases, 41-50 years age 12% (5) cases. mostly cases were found between 10-20 years.^[5]

Usually sinusitis is acute at early stages but leads to chronic sinusitis if it is not treated properly or due to some other causes (DNS etc). most of cases that we observed were chronic 95%(38) cases. It may be due to environment of Pakistan where people feel need of treatment when diseases becomes severe.

We tried to observe the effect of pollution on the progress of disease i.e. effect of dust and smoke. sinusitis mostly effected by dust 17% (7) cases. Some people are affected by smoke 10% (4) cases. Effect of dust and smoke is studied under allergies. Dust and smoke affect those people who are allergic to them.^[7]

Antibiotics are prescribed to control microorganisms (mostly bacteria) that cause sinusitis 97% (39) cases. Many types of antibiotics are available. According to our

study results, antibiotics prescribed for sinusitis are amoxicillin 12% (5) cases, Clarythromycin 15% (6) cases, Cephalosporin 47% (19) cases. according to our observation use of cephalosporin was high, when we asked about the reason, answer was that these were economical and had less side effects as compared to amoxicillin that is claimed as drug of choice for sinusitis

Antihistamines are prescribed to reduce allergy 92% (37) cases. mostly prescribed antihistamines are fexofenadine 40% (16) cases, citrizine 22% (9) cases and loratidine 15% (6) cases.

Analgesics are also prescribed with these medications 57% (23) cases. These are used to relieve pain (headache & facial pain) that is common symptom of sinusitis. mostly used analgesics are ibuprofen 20% (8) cases and PCM 12% (5) cases.

So treatment regimen used in sinusitis were antibiotics with antihistamines 93% (37) cases, and antibiotics with antihistamines and analgesics 57% (23) Cases.

At the end of our practical work we concluded that mostly sinusitis starts as an upper respiratory infection of viral origin. Viral infection may lead to inflammation of the sinuses that usually resolves without treatment in less than 14 days. If symptoms worsen after 3 to 5 days or persist for longer than 10 days and are more severe than normally experienced with a viral infection, a secondary bacterial infection is diagnosed. The inflammation may predispose to the development of acute sinusitis. If the acute sinusitis does not resolve, chronic sinusitis may develop. Basic causes of sinusitis are viruses, Bacteria, and Fungi etc. factors that promote the transition of viral infection to chronic sinusitis are allergy, deviated nasal septum, smoking, poor diagnosis^[7]

Successful treatment is complicated and is affected by a broad of factors associated with the diagnosis choice of treatment and social factors.^[10]

Antibiotics, such as amoxicillin for 2 weeks, have been the recommended first-line treatment of uncomplicated acute sinusitis. Amoxicillin-clavulanate (Augmentin) is also an appropriate first-line treatment of uncomplicated acute sinusitis other options

include cephalosporin. For chronic sinusitis Amoxicillin-clavulanate (Augmentin) and cephalosporin is recommended. At Mayo hospital cases that reported were mostly chronic .Cephalosporin was frequently prescribed .Frequently used cephalosporin was cefuroxime is more resistant to B-lactamase than that of amoxicillin. It is more economical and has less side effects^[11]

Additionally antihistamines were also used with antibiotics. But their use should be with caution because on prolong use they may cause dryness of nasal mucosa.

At Mayo hospital it was very frequently used without taking history of allergy. we observed 37 patients who were prescribed with antihistamines out of 40 patients.

Headache and facial pain are common symptoms of sinusitis, so that analgesics such as Ibuprofen etc are also prescribed to the patients to relieve the pain

In addition to above the medications used are corticosteroid, decongestants, and mucolytics are also used^{[1][2]}

Mucolytics are used to reduce the viscosity of mucous. Decongestants are used to relieve congestion of nose but they may cause dependency so it is used with caution.

My study indicates that antibiotics typically clear up an infection within two weeks. However, in the case of chronic sinusitis, antibiotics may need to be taken for up to 28 days. Antihistamines sometimes used to block allergic reactions and dry excess mucus. However, antihistamines should be used with caution

ACKNOWLEDGEMENT

We are thankful to the vice chancellor of University, Professor Dr. Bushra Mateen and registrar of University, Miss Shaista Wayne and the Head of Pharmacy Department, Dr. Hafeez.

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