



## ALLERGY

### A Frequent Cause of Sinusitis

#### So what is sinusitis?

Although many individuals interpret sinusitis to mean “sinus infection,” sinusitis actually means inflammation of the sinus mucus membranes, which may be due to infection, allergy, inflammation or obstruction of the sinuses due to a number of reasons.

See Table B

The term sinusitis is also used by individuals and the media to indicate symptoms of pressure or discomfort over parts of the face. These symptoms are typical of a “bad cold” or severe allergy symptoms that may be associated with nasal congestion, post-nasal drip, throat clearing, headaches, or sinus pressure.

See Table A

From a medical standpoint, sinusitis simply means inflammation of the sinuses, or more precisely, inflammation of the mucosal tissues lining the sinuses.

Sinus inflammation can be caused by infection, allergy and many other factors.

#### Varied symptoms of sinusitis

Symptoms of chronic sinusitis can vary depending on the degree and location of inflammation in the sinuses. Contrary to popular belief, headache is not the most common characteristic of chronic sinusitis. The most frequent complaint related to chronic sinusitis is nasal congestion with or without post-nasal drip.

Chronically infected sinuses are typically filled with thick or dried secretions. Secretions may or may not drain easily, thus obstructing the nasal passageway. Other symptoms include sensitive facial fullness and loss of smell. One may experience fatigue, poor concentration, decreased productivity, and even depression.

See Table A

Headaches—particularly migraines—are at times

# Symptoms of chronic sinusitis

Nasal congestion or obstruction  
Lost/decreased of sense of smell and taste  
Headache  
Snoring, sleep apnea  
Phonations problems  
Halitosis  
Hoarseness  
Ear pressure  
Vertigo  
Frontal ethmoid or maxillary sinus pressure  
Post nasal drip, throat clearing, hoarseness, sore throat  
Cough, worsening of asthma symptoms  
Fever, general malaise



erroneously attributed to sinusitis. Nasal/sinus allergy, chronic sinus disease and migraines can all be triggered by changes in the weather and barometric pressure. Therefore, a history of weather-induced headaches may obscure the distinction between nasal allergy, migraines and sinusitis. To further complicate matters, up to 1/3 of individuals with upper respiratory allergies also have migraines.

## Which diseases mimic sinusitis?

Many factors can play a role in either causing sinus disease or mimicking the symptoms of sinusitis.

See Table B

Allergic inflammation of the sinus mucosa can cause swelling and may lead to obstruction, decreased ciliary activity, and increased production of thick, tenacious mucus. The end result: interference with the normal cleansing function of free mucus passage through the sinus and nasal cavity.

## What's the connection between allergy and sinusitis?

Allergies are caused by an abnormal immune response to allergen exposure (pollen, animal dander, dust mites, molds, etc.). Allergic inflammation can occur anywhere along the respiratory tract—especially in the mucus-lined nasal and sinus passageways.

Allergic inflammation of the sinus tissue can interfere with the normal clearing of resident bacteria within the

sinus cavities, often leading to infection. Under these circumstances, respiratory allergy can trigger repeated sinus infections. Since chronic sinusitis may originate from both allergy and infection, both of these underlying factors should be carefully evaluated and treated for effective disease management.

## Long-term effects of sinusitis

Even if the underlying trigger of chronic sinusitis is indeed allergy, the presence of a secondary infection must also be treated effectively. Allergy-induced, chronic sinusitis due to and related to repeated sinus infections can lead to significant and permanent alteration of the sinus mucosa and surrounding structures. Once significant damage occurs, full restoration of normal function of the sinus cavities may not be entirely possible, even with surgery.

## Work-up for chronic sinusitis

A comprehensive investigation of all possible causes of symptoms should be undertaken in every case of chronic sinusitis prior to recommending surgery.

See Table C

## Complications of sinusitis

A delay in identifying and treating an underlying allergic component of chronic sinus disease can lead to years of unnecessary suffering and may result in serious

## Differential diagnosis

Respiratory allergy  
Nasal polyps  
Obstruction of sinus/nasal passageways  
Aspirin hypersensitivity  
Deviated nasal septum and other obstructions  
Toxic irritants  
Cocaine abuse  
Fungal sinusitis  
Immunodeficiency  
Migraine headaches  
Cystic fibrosis  
Immotile cilia syndrome, Kartagener's synd.  
G.E.R.D.  
Wegener's granulomatosis  
Cancer involving the sinus cavity



# Chronic sinusitis: the initial investigation

Allergy history and testing

Nasal endoscopy

Imaging studies (C.T, MRI)

Lab work: quantitative

immunoglobulins,

sweat test

Nasal and sinus cultures, gram stains

Biopsy for unusual infections or pathology



complications associated with sinusitis.

See Table D

## Classification of bacterial sinusitis

The medical labeling of sinusitis depends on how long symptoms have been present. Acute sinusitis lasting up to four weeks refers to the initial onset of sinus symptoms. Subacute sinusitis refers to symptoms lasting 4 - 12 weeks. Recurrent, or relapsing acute sinusitis is defined as three or more episodes of isolated acute sinusitis within a 12-month period. Chronic sinusitis is the term used when symptoms last more than 12 weeks with both infectious and non-infectious causes.

Unlike acute sinusitis, viral infections play practically no role in infectious chronic sinusitis. Several well-known organisms remain common causes of sinusitis.

See Table E

Effective treatment for bacterial sinusitis includes the use of antibiotics, as well as re-establishing sinus passageway ventilation to ensure proper drainage. Medications may reduce inflammation, and bacterial infections may be treated with antibiotics, including the following:

- *First line:* Amoxicillin, trimethoprin-sulfamethoxazole, doxycycline.
- *For repeated infections:* Levofloxacin, amoxicillin-clavulante (Augmentin), clarithromycin (Biaxin) or prolonged IV therapy in severe cases.

Poor response to antibiotics in cases of bacterial sinusitis may indicate the presence of a confluent sheath of bacteria covering the sinus mucosa (biofilm), persistent obstruction, complications, immunodeficiency, fungal infection, or sinusitis due to a non-bacterial cause not yet defined.

Persistent obstruction will require a surgical approach through functional endoscopic sinus surgery (FESS).

## What happens when allergy and sinus disease coexist

With so many causes of sinusitis, the role of allergy is often overlooked and under treated. If antibiotic treatment fails to improve chronic sinusitis, a thorough allergy and immunology evaluation is clearly warranted early in the investigation.

Unfortunately, many individuals who have had longstanding sinus disease (with or without nasal polyps) and even those who have had one or more surgeries may never seek an evaluation from an allergist. So they continue to live with their symptoms. With upper respiratory allergies present in up to 20% of Americans, it is not uncommon to have both allergic rhinitis and sinus disease. Some studies have shown the presence of both diseases in the same individual to be as high as 70%.

Of all the predisposing causes of sinus disease, underlying allergy may be the trigger most responsive to treatment. Therefore, treating underlying nasal allergies will always decrease the risk for sinus infections. Evidence of allergy on physical exam may be helpful (allergic shiners, swollen turbinates, eosinophils in mucus). Also, a history of prior respiratory allergy or atopic dermatitis may help identify risk factors.

## Allergy treatment for allergic sinusitis

For more than 90 years, allergen immunotherapy (allergy shots) has been recognized as one of the most effective

## Sinusitis complications

Chronic nasal obstruction

Sleep apnea

Anosmia

Chronic sore throats

Orbital cellulitis

Cavernous sinus thrombosis

Brain abscess

osteomyelitis

Meningitis and septicemia

General malaise and chronic headache





# Common bacteria that cause sinusitis

Streptococcus pneumoniae  
Haemophilus influenzae  
Pseudomonas aeruginosa  
Staphylococcus aureus  
Moraxella catarrhalis  
Anaerobic bacteria



treatments for respiratory allergy. Multiple studies over the years have shown that immunotherapy/allergy shots are cost-effective in reducing nasal and eye symptoms, decreasing medication use and improving quality of life. For years, allergic individuals have reported fewer upper respiratory infections while on allergy shots. Recent studies have confirmed the value of immunotherapy for allergic sinusitis and asthma.

See Table F

Aside from medical treatment, it is clear that immunotherapy remains an important and unique treatment for chronic allergy sufferers with chronic sinusitis.

Although sinusitis and allergy can be separate and independent processes, allergy appears to worsen existing sinusitis. Upper respiratory allergy often plays a significant role in maintaining chronic inflammation of all of the mucosal membranes including those of the sinuses.

Patient data reveals that allergy injections are particularly important in allergic individuals not responding to medical and surgical treatment for chronic sinusitis in which allergy plays a role.

## Treatment for sinusitis associated with allergic disease

Treatment can be divided into allergen avoidance, medications, and immunotherapy for management of the allergic component of chronic sinusitis.

Of all the therapy offered for respiratory allergy, injection therapy or immunotherapy is perhaps the most specific and effective treatment available in preventing recurrent symptoms in a hypersensitive patient. However, immunotherapy is only effective if the offending allergens are identified and incorporated into the allergy serum in adequate concentrations. Half-measures often prove inadequate in stubborn cases. A careful and comprehensive allergy history and skilled allergy testing

are the basis for an effective treatment program.

Allergy injection treatment is carried out over a long period of time (3 - 5 years in most cases). At first, patients receive weak solutions of allergens. The dose is then gradually increased to induce tolerance without reactions. The goal is to achieve a high-maintenance dose which affords the best symptom relief. Improvement in symptoms usually lasts for years after completing a successful course of allergy injections. ■

## Allergist's Note

*Not all forms of immunotherapy are equal. **Sublingual immunotherapy** (allergen drops under the tongue) cannot be recommended at this time. Sublingual therapy is offered by a few physicians as an "off-label" treatment program, and has not been FDA-approved as an effective treatment. Therefore, until proven and approved, the use of sublingual treatment as currently available may delay the relief of symptoms and waste the patient's time and money.*

## Treatment options

### Goal

Reduce inflammation, keep nasal passages draining, and eliminate underlying cause.

### Strategy

- Avoidance
  - air cleaner, dust control
- Medications
  - Nasal saline wash
  - Antibiotics /Anti fungals where indicated
  - Nasal or oral corticosteroids
  - Nasal mast cell stabilizers (cromolyn, astelin, patanase)
  - Antihistamines and decongestants
  - Leukotriene antagonists
  - Pain relievers
- Immunotherapy
- Aspirin desensitization for those with aspirin hypersensitivity
- Sinus surgery

