Rhinosinusitis: An Urgent Care Perspective

Sean M. McNeeley, MD

Introduction

Although sinusitis in one of the most common diagnoses in the acute care setting, controversy remains about how to diagnose and treat it. This is particularly evident when you compare practice patterns to the medical literature. Although less than 2% of acute sinusitis cases are likely bacterial, as many as 92% of patients receive antibiotics. Part of this disparity may be due to patients' expectations. An understanding of the currently accepted methods of diagnosis and treatment as well as tools to assist providers in decreasing patients' expectations for antibiotics may help providers narrow this gap. This article reviews current diagnostic and treatment patterns and methods to modify patient expectations with the goal of applying the information to the urgent care setting.

Background

Sinusitis is one of the most common complaints in acute care. Any provider of urgent care medicine knows that patients with some version of "sinus" complaint are a daily occurrence. The average adult has two to five illnesses involving the nose and contiguous sinus cavities.[1] The number of days missed from work is similar to that reported for acute asthma.[2] It is also the second most common infectious disease seen by generalist physicians in Canada.[3] The economic burden may be as high as two billion dollars.[1] The challenge for the acute care provider is to manage a patient's expectation (usually antibiotics or immediate relief) while remaining consistent with current medical knowledge (most cases are viral or just need a tincture of time) without the benefit of a prior relationship. The literature also reports physicians' prescribing patterns are not always consistent with current understandings of the most effective means of diagnosis and treatment. While only 2% of sinusitis cases are likely bacterial, as high as 92% of patients seeking care are given an antibiotic.[4] While not every patient with sinus symptoms seeks care, the disparity is shocking. These facts make it an important disease process for acute care providers to reconsider and assure that their practice is consistent with the information available to them. This article will concentrate on acute sinusitis from an urgent care perspective.

Definition

The nose and paranasal sinuses represent a group of openings in the front of the skull decreasing its weight and helping to humidify and warm air before it enter the lungs. The sinuses open into the anterior nose through small apertures know as ostia. The entire area is layered with cilia that trap foreign bodies and bacteria and help to keep the small passages clear. Sinusitis is an inflammatory process affecting these areas, causing symptoms due to swelling and blockage of the ostia.[5] Despite its common occurrence and years of investigation sinusitis is still not completely understood, and definitive diagnosis still remains a challenge. An accurate and practical diagnostic test for frontline physicians is lacking. Several guidelines have been proposed, but even they are not completely consistent. The name sinusitis itself may be changing. Due to the high prevalence of anterior nasal passage blockage or congestion, the term rhinosinusitis has become more prevalent. Both terms relate to the same disease process of inflammation or infection of the sinuses and nasal mucosa. The main symptoms of this disease process include purulent rhinorrhea, nasal blockage, na-

sal congestion, facial pressure, tooth pain, headache, ear pain, sneezing, malaise, and fever.

Most cases of sinusitis can be divided into viral and bacterial causes, although other more rare etiologies, such as fungal sinus infections, do occur. Acute viral rhinosinusitis (AVRS) has many etiologies. In most cases the etiology of the AVRS does not change management or prognosis and thus has little importance. Acute bacterial rhinosinusitis (ABRS) is most frequently cause by *Streptococcus pneumoniae, Haemophilus influenza*, or occasional *Moraxella catarrhalis.* Although some controversy exists about the definition of acute versus chronic sinusitis, symptoms present less than four weeks are most commonly used.

Diagnosis

As with any other illness in the clinical setting specific diagnosis is only important if it alters the course of treatment or allows the clinician to provide an expected course of the disease process. Patient testing only makes sense in the clinical setting if the test results are available in a reasonable amount of time, the test has minimal or no risks, the test has reasonable cost versus benefit ratio, and the test is widely available. In the acute care setting, differentiating viruses is not practical. Differentiating bacterial etiologies also does not make sense unless a specific individual patient factor, such as treatment failure or immune status, is present. The key question is whether the etiology is viral or bacterial. It has been reported that less than 2% of sinusitis cases in a primary care office are bacterial in origin, but as much as 30% may be so in specialist offices.[3]

Several clinical guidelines and reviews have been proposed to help differentiate between AVRS and ABRS, but there are inconsistencies between them. New diagnostic tools are also still in the research phase.

As with any diagnostic consideration risk for the disease process is a good place to start. Several factors that predispose a patient to sinusitis include upper respiratory infections, anatomic variations, allergic rhinitis, nasal dryness, dental issues, immunodeficiency, and local irritation. The Task Force of Rhinosinusitis in 1997 developed symptom-based criteria for the diagnosis of rhinosinusitis. Two major or one major and two minor criteria were considered sufficient to make a clinical diagnosis. Major criteria included nasal drainage, nasal congestion, facial pain or pressure, postnasal drip, and anosmia. Fever, cough, fatigue, dental pain, and ear pressure or fullness were considered minor criteria.[6] Today, this is a step in diagnosis but does not help define the etiology as bacterial or viral. Most of the recent guidelines do include nasal congestion or blockage, purulent rhinorrhea, and facial pain or pressure as defining symptoms.[2] Sinus puncture is considered to be the gold standard for proving bacterial origin of rhinosinusitis.[4] This procedure is rarely needed in clinical practice and not recommended in the primary care setting.[7] Determining bacterial versus viral is best accomplished by considering duration, symptom pattern, and severity. Duration of less than five days is generally considered viral. No improvement or worsening between five and ten days may be early bacterial disease, and greater than a ten-day duration points to a bacterial etiology. Most viruses peak between three and five days and resolve by seven in adults and ten days in children. Worsening after five days or initial improvement with subsequent worsening both lend to increased likelihood of a bacterial etiology. Severity has also become an important part of the decision between AVRS and ABRS. Although originally proposed and validated for chronic sinusitis, a good method for evaluating the severity of illness is a 10-point visual analog scale. The sinusitis scale uses the question "how troublesome are your sinusitis symptoms?" with 0 representing "not troublesome" and 10 being "worst thinkable." Answers can be categorized as 0-3 mild, 4-7 moderate, and 8-10 severe.[8] Other factors considered in severity include fever, localized pain, and swelling. Consistent findings of duration, course, or severity, alone or, more importantly, together, increase the likelihood of a bacterial etiology. A recent survey of pediatricians showed similar practice patterns in children age six and under. The most important consideration was symptom duration. This was considered very important by 93%, followed by purulent rhinorrhea and nasal congestion, 55% and 43% respectively.[9]

In the past plain x-ray films were commonly used to diagnose sinusitis. Currently, imaging is not recommended in uncomplicated sinusitis cases. Plain radiography may even have a lower sensitivity than clinical diagnosis and does not help differentiate between viral and bacterial etiology. In patients who do require imaging plain radiography has been replaced by simple axial or coronal CT.[6]

Treatment

Decongestants may provide symptomatic relief. Over-the-counter topical decongestants (phenylephrine, oxymetazoline, and xylometazoline) used in short durations shrink swelling and may relieve symptoms of sinus congestion. Use longer than 10 days has the risk of tachyphylaxis. Theoretically, because it does not decrease nasal blood flow, phenylephrine is the preferred agent.[4] Oral decongestants have less effect on the nasal mucosa when compared with topical steroids. They also have more potential for systemic adverse effects. The only benefit oral decongestants provide when compared to topical is the decreased risk of tachyphylaxis.[4]

Mucolytics routinely prescribed alone or in combination with decongestants are thought to thin mucosal secretions and thus facilitate clearance. Although they have not been shown to cause harm, they have failed to show measurable benefit.[4] Antihistamines only have benefit for those patients who have baseline allergic disorders. They also may dry the mucosa of non-allergic patients potentially worsening rhinosinusitis. Therefore, they are not recommended for patients without allergies.[1] Intranasal steroids, although not approved by the Food and Drug Administration in the United States for treatment

of ABRS, have become more frequently recommended, particularly in recent consensus guidelines, but controversy does exist. Most of the research in this area has been done by the pharmaceutical industry.[1] Nasal steroids are thought to reduce pro-inflammatory factors, decrease the allergic response, and improve sinus drainage.[10] Some evidence has shown nasal steroids are equivalent to antibiotics in their results when treating sinusitis. Other studies have shown that adding nasal steroids to antibiotics improves efficacy. Short-term use has few side effects, although it may result in epistaxis. This is usually benign but very concerning to patients. Systemic corticosteroids are best reserved for severe disease, because their biggest role is in pain relief. They have not been shown to have other positive effects in the average patient.[5] Nasal saline spray and irrigation have both been proposed for symptomatic relief of rhinosinusitis. Although the majority of research has been focused on chronic rhinosinusitis, some evidence has shown benefit in acute rhinosinusitis. The mechanism of action is uncertain, but it is thought to include direct cleansing, removal of inflammatory mediators, and improved mucocilliary function.[11] Saline irrigation can be performed by using a neti pot or other low pressure spray bottle. Saline is instilled in one nostril and it returns through the other side. The most common adverse effect of this treatment is a sense of anxiety or discomfort the first time it is used.[12]

Table 1. Rhinosinusitis treatment highlights from an acute care perspective.

- Antibiotics should be considered when symptoms are severe.
- Patients with less than five days duration are most likely viral.
- Symptoms worsening after five days or initial improvement may be bacterial.
- Symptoms after 10 days are more likely bacterial in origin.
- Most patients' symptoms will resolve spontaneously.
- Backup prescription may reduce antibiotic use.
- Amoxicillin and trimethoprim/sulfamethoxazole are first-line agents.
- Amoxicillin/clavulanate or fluoroquinolones for treatment failures.
- Intranasal steroids with or without antibiotics may be beneficial.
- In general imaging is not recommended.
- CT is superior to plain films when indicated.

Antibiotics have been the most commonly used treatment for all types of sinusitis. The decision to use antibiotics should be carefully considered. Studies have shown that 0.5 to 2% of acute sinusitis is likely to be bacterial in origin, and more than 60% of bacterial acute rhinosinusitis cases resolve on their own.[7] If indicated, most authors and guidelines propose 10 days of amoxicillin or trimethoprim sulfamethoxazole for patients with penicillin allergy. Patients who fail after seven days or have indications for broader spectrum antibiotics would likely benefit from amoxicillin/clavulanic acid or a respiratory fluoroquinolone. There is some evidence that indicates less treatment failures in children using amoxicillin/clavulanate potassium; however, this was compared to placebo not amoxicillin.[12] Other evidence points to five days of therapy being as good as ten, but most authors still recommend ten.

Challenges and Future Research

Considering the current understanding of rhinosinusitis several factors make the care of these patients in an urgent care setting challenging. There is a low risk of bacterial infection (less than 2%) and no definitive bedside test. Unfortunately patients' expectations for antibiotic treatment may be as high as 70%.[13] Patient satisfaction has become even more important in recent years and will begin effecting reimbursement soon. These factors make the situation even more difficult for the provider without an ongoing relationship with the patient. Although national efforts to educate patients about the negatives of unnecessary antibiotics and the development of resistant bacteria are ongoing, patients still present with the expectation of an antibiotic prescription. Years of antibiotic prescriptions for most respiratory infection are not easily forgotten by patients. There are a few tools that providers can use to help meet patients' expectations while following treatment guidelines. Backup antibiotics are one such tool, particularly in the situation where the provider's assessment indicates a low risk of bacterial infection and the patient's experience has included antibiotic prescriptions for similar symptoms. In this situation, the provider acknowledges the patient's desire to get well and the successful history of antibiotic use in the past. The risks of antibiotics, such as allergic reaction, side effects, and resistance, are entertained. The likely viral nature of the current rhinosinusitis with the expectation of spontaneous resolution in a specified number of days is also presented. Finally, the compromise of an antibiotic prescription written today to be filled only in the event of failure of spontaneous resolution is offered. This approach does risk the patient leaving and just filling the antibiotic today but has been shown to reduce antibiotics use while maintaining patient satisfaction.[14] Every time a patient actually waits and recovers, it reinforces the fact that an antibiotic is not always needed. Although not a perfect solution considering the state of current practice, every movement toward less unnecessary antibiotic prescriptions should be considered a victory. Recent studies using C-reactive protein to help decrease the use of antibiotics have shown some promise. Physicians provided with the results and the parameters of when to prescribe and when to

consider a backup antibiotic were less likely to prescribe antibiotics. This was accomplished without compromising patient care and actually increasing patient satisfaction.[15] Research in this area is still in the early stages, and specific values for CRP as well as an inexpensive bedside test are not available to the average urgent care provider. Studies are also ongoing to consider the use of bedside ultrasound to make prescribing decisions as well. For now acute care providers will have to settle for understanding the facts as far as we know them and using duration, severity, and symptom course to make antibiotic prescribing decisions.

Conclusion

Rhinosinusitis is a frequent complaint in the acute care setting. Providing evidence based care while meeting patient expectations is often a difficult task. Careful choice of tools such as backup antibiotics and medications for symptomatic relief may help. Unfortunately, significant potential for side effects limits the use of these tools in many patients. Identifying which patients might improve with antibiotics is still a challenge. The patient's history particularly duration, symptom pattern and severity are the most important in making this decision. For the majority of patients imaging is not helpful. Antibiotic choice is also controversial. Most guidelines recommend amoxicillin or trimethoprim with sulfamethoxazole for patients with penicillin allergy. Duration of treatment is usually 10-14 days. Hopefully as we teach our patients the difference between viral and bacterial infections treating sinus symptoms will become less of a challenge from a customer service perspective.

Sean M. McNeeley, MD, is a board-certified family physician who has been practicing urgent care medicine since 1997. He is a founding board member of the Urgent Care College of Physicians and the Board of Certification in Urgent Care Medicine. Dr. McNeeley has lectured nationally over the last several years and teaches students, residents, and fellows in his position as Medical Director of University Hospitals Urgent Care Network in Cleveland.

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