

*Difficulties in Diagnosis and  
Differential Diagnosis of Sinusitis.  
A Multispecialty Round Table*

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Nelson Augusto Rosário Filho, Rainer Haetinger,  
Renato Roithman, Washington de Almeida*

***Richard Voegels (ENT)***

We will discuss the most important and controversial items in rhinosinusitis. Let's start with acute rhinosinusitis and then chronic rhinosinusitis. The concepts derive from the EPO's 2007 (Fokkens WJ, Lund VJ, Mullol J et al., European Position Paper on Rhinosinusitis and Nasal Polyps 2007 Rhinology 2007;45; suppl. 20: 1-139) and the AAO-HNS's October 2007 Guidelines (Rosenfeld R, Bhattacharyya N, Haydon III R, Marple B, Smith T. Evidence-Based Management of Adult Rhinosinusitis. Otolaryngology - Head and Neck Surgery 2007; Volume 137, Issue 2, Pages P82 - P82) with some new material that will be discussed here.

First let's talk about the definition of rhinosinusitis, which is a difficult task. There is no ideal definition. In these 2007 guidelines the terms "sub-acute" and "persistent intermittent" were removed, and only "acute" and "chronic" are accepted.

I would ask the panelists, "what do you think about this classification?" And, if this classification of acute and chronic is accepted, then will the chronic condition be the evolution of the acute state when it is not properly treated? There is evidence that shows that this is not the case. There is also a viral acute rhinosinusitis which usually improves in a period of ten days, and a non-viral acute rhinosinusitis that gets worse after five days or has symptoms for more than ten days or less than 12 weeks. Let's start by asking Renato Roithman, "do you agree with this classification or not?"

***Renato Roithman (ENT)***

I do agree with this classification, which is based in the clinical history we all elicit. I even design a timetable where I put "day zero" at the left and, depending on the other symptoms, I can establish if it's an acute condition or a long-standing problem. This is important because of the different bacteriology in each case.

***Richard Voegels***

OK. The severity of the rhinosinusitis is another difficulty. We need to note whether the condition is more or less severe, which is difficult in a child. There

is a scale based on evidence that may be used, the visual analog scale (VAS), that enables the patient to give a score to the intensity of their symptoms where zero is when there is no symptom and ten is when the symptom is very severe. This classification relates severity of the symptom to the quality of life. Symptoms graded more than five on the VAS are the ones that affect the quality of life. This scale classifies them into mild, moderate (3 to 7), and severe (more than 7).

Washington, do you agree with this classification?

**Washington de Almeida (ENT)**

The classification we used before had no interest in quality of life. And many times patients with mild or severe symptoms will need different treatments. So yes, I agree with this new classification. .

**Richard Voegels**

Let's start with the first case. This is Peter, a six-year-old boy with a history of nasal congestion, sneezing, and fever for the last two days, typically a cold, but he also has a referred frontal headache. This is a type of case very commonly seen in the outpatient clinic. I will ask Joaquim Rodrigues, who is a pediatric pneumologist, what would be his assessment.

**Joaquim Rodrigues (Pediatric Pneumologist)**

This is a very frequent case in the clinic, an acute condition. They are mostly due to a viral infection. It is also common for the child to present other symptoms like headache or abdominal pain. In these cases there should be close follow up. We treat the patient as having an acute upper airway infection, and check its evolution. If symptoms persist or the fever stays for more than five days, he should be reassessed.

**Richard Voegels**

With this same case, Rainer, what is the importance of x-rays at this point: are they necessary?

**Rainer Haetinger (Radiologist)**

In the acute phase without complications, there is no need to have x-rays taken, at least not a simple x-ray. In the first year of life an x-ray should not be performed. Usually they will only confirm the diagnosis already made. It is useless in the acute phase, if there are no complications.

**Richard Voegels**

Great. So at first there is no need for x-rays or antibiotics in this setting. Let's say that Peter continues to have symptoms after five days and gets worse. Renato, what would you think about this, and what would be the most important symptoms of acute bacterial rhinosinusitis?

**Renato Roithman**

If Peter has worsened after five days, we need to know exactly which symptom is worst. Nowadays we tend to avoid using antibiotics for longer time. I wouldn't ask for an x-ray yet, although the frontal headache might be a complication. Does he have a fever?

**Richard Voegels**

No, he has no fever. He has worsening nasal congestion, and the drainage is yellowish.

**Renato Roithman**

This is exactly the turning point for whether to use or not use antibiotics. Maybe I would keep track of Peter for another two or three days.

**Richard Voegels**

Nelson, what are the predisposing factors for acute rhinosinusitis?

**Nelson Augusto Rosário Filho (Pediatric Immunologist)**

I think this case is a URI that has been complicated with a bacterial infection. At this point I think the best treatment is to clean the nose and follow up. No need for examination.

**Richard Voegels**

Joaquim, do you agree? What is your experience in the emergency room with this kind of patient?

**Joaquim Rodrigues**

In the ER it is very common to ask for x-rays for this kind of case. I have seen children have five or six x-rays of the paranasal sinuses during a year! This examination is worthless, and the guidelines of the American Academy of Pediatrics are clear: diagnosis of acute rhinosinusitis is based on clinical signs and symptoms. In our experience, a finding of mucopurulent drainage in the posterior nasal area is diagnostic, without the need for x-rays.

**Richard Voegels**

Let's talk about the treatment of acute rhinosinusitis. Now we have a document with more than a thousand citations, with guidelines based on evidence. This document recognizes that an oral antibiotic should be used when there is a strong suspicion of acute rhinosinusitis. The benefits of using topical steroids in acute rhinosinusitis have much supporting evidence. At this point, what is your experience with using topical steroids in acute rhinosinusitis?

**Washington Almeida**

First I would like to comment on Peter's case. Usually as soon as we see purulent rhinorrhea, we start antibiotics. We may think that the yellowish color is due to infection, but it may be secondary to neutrophils in the secretions, and not to a real infection. So the use of antibiotics is also based in clinical evaluation, not on the color of the rhinorrhea.

In regard to the use of topical steroids: when the patient has severe nasal swelling I use oral steroids for two or three days to improve this, and then continue with a topical one. In these cases, if we start with topical steroids it would be useless, because it would stay in the inferior turbinate only. When you have good permeability, a topical steroid would really work.

**Richard Voegels**

Just as a point of information: those studies were done using a topical steroid, a mometasone, as drops, not the usual spray. Nelson what is your experience?

**Nelson Augusto Rosário Filho**

I agree. The question is whether the steroid would avoid use of antibiotics. Some studies compare amoxicillin for 14 or 21 days, and topical mometasone. They showed that the response to topical steroids is as good as to antibiotics. I agree

with cleaning the nose and using decongestants before using the topical steroid, to improve its access to the mucosa.

***Richard Voegels***

Let's say that Peter receives amoxicillin, and he develops unilateral proptosis, even with conjunctival swelling. If Peter comes to the clinic like this, what would be your assessment, and when should a patient with sinusitis be referred to a specialist in ENT or an allergy specialist?

***Joaquim Rodrigues***

The last time I saw a patient with proptosis, he also had alteration of consciousness. It is important to do a neurological exam—this patient had asymmetry in the size of the pupils and also meningitis and intracranial abscess. It is an emergency. This child has to be treated in the hospital, have a CT-scan of the paranasal sinuses and also a CT-scan of the brain to evaluate for intracranial abscess or thrombosis in the cavernous sinus. Antibiotics should be given intravenously because this is a complication of sinusitis, and a severe one. We usually use ceftriaxone intravenously or amoxicillin with clavunate, intravenously.

To answer the question about when should a pediatrician refer a patient to an ENT, I would say that it would be children with chronic symptoms. In these cases several factors should be investigated. For example it is very common to see an association with allergic rhinitis, which should be addressed. There is also an association with asthma. Other factors are adenoid hypertrophy, that needs to be evaluated by an endoscopic exam as well. Also, other causes may need to be evaluated by a pulmonary specialist, such as cystic fibrosis that usually presents with nasal polyps or ciliary dyskinesia, which is not frequent. Around 20% of children who receive PE tubes may have ciliary dyskinesia, and this is also true in cases of chronic sinusitis.

***Richard Voegels***

Rainer, when should we ask for a sinus CT-scan during acute or chronic conditions?

***Rainer Haetinger***

Let's see, a CT-scan with contrast, which is the correct one to ask for when we want to evaluate a complication, to evaluate for the presence of an abscess and distinguish it from just an inflammation. With the contrast we can verify areas that do not uptake it, suggesting an abscess. So it is very important to use an IV-contrast agent with the CT-scan. If there is a contraindication to the use of Na-iodine contrast agent, we may ask for an MRI that would also help to define the diagnosis of periorbital abscess, and it is important for intracranial complications. When there are neurological signs or symptoms we should ask for an MRI. In chronic cases without complication we should ask for a CT-scan of the sinus.

***Richard Voegels***

Nelson, would you like to add something?

***Nelson Augusto Rosário Filho***

Just, to remember that we can also have immunodeficiencies as factors contributing to chronic rhinosinusitis, usually a defect in production of antibodies that destroy encapsulated microorganisms. They present as chronic infections.

***Richard Voegels***

When we have an abscess in the orbital area, there is an indication to perform surgery, although there are some authors who favor medical treatment. Renato, would you avoid surgery in case of an abscess in a child?

***Renato Roithman***

Certainly not. Diagnosis of an abscess leads to surgical drainage. If the condition improves with antibiotics and steroids, then it was not an abscess. It would probably be periorbital cellulitis.

One important issue is when to refer a patient to an ENT for endoscopy. One factor is that the presence of unilateral symptoms is contrary to a diagnosis of allergic rhinitis, as in allergy the symptoms are always bilateral. Also, patients who do not respond to the usual treatment or have chronic headache or atypical conditions should be referred. A patient with proptosis has to be evaluated with a CT-scan, as has already been discussed, and treatment is in the hospital and should include surgical drainage if there is an abscess.

***Richard Voegels***

Is there another opinion?

***Washington Almeida***

It is important to have an ophthalmologic evaluation before we perform surgical drainage.

***Richard Voegels***

Very well, it is very important to evaluate sight before the surgery, also to avoid lawsuits.

Let's go through the factors that contribute to chronic rhinosinusitis that we see in the clinic. Take the classic child with constant nasal drainage throughout the year. The diagnosis might be adenoid hypertrophy, if the patient is between the ages of two and six. This can be fully evaluated using the flexible endoscope. Joaquim, what is your experience with these children with constant nasal drainage, and what would be the relevance of adenoid hypertrophy?

***Joaquim Rodrigues***

This is a very frequent situation, as mothers come to the clinic claiming that the child has a constantly running nose and does not improve with treatment. They are kids who develop adenoid hypertrophy secondary to frequent infections or due to allergies, and develop mouth-breathing. This is very important because very frequently we find that they have sleep disturbances and alterations in the quality of life. They may also have problems in their development, at school or in using memory. There are many studies on this matter. These kids should be thoroughly evaluated, and when necessary may have polysomnography. If that test is abnormal, an adenoidectomy is warranted.

***Richard Voegels***

Joaquim has already talked about cystic fibrosis. They are usually children with nasal polyps and thick mucus drainage.

To finish, let's talk about the medical treatment of chronic rhinosinusitis. In the guidelines there are only three medications with enough evidence to support their use to treat chronic rhinosinusitis. Antibiotics should be used for more than 12

weeks. This trend was started in Japan, using macrolides. It has also been used in Europe, the United States, and Japan, with evidence of improvement. Topical steroids and nasal lavage are the other two recommendations, along with the antibiotics. Do you agree?

**Washington Almeida**

Although there is evidence for this long 12 weeks of treatment, I have no personal experience.

**Richard Voegels**

Joaquim?

**Joaquim Rodrigues**

It is the same for me. As pediatricians, we use antibiotics for about two weeks in acute rhinosinusitis. There is an exception in cases of infection by *Staphylococcus aureus*, which functions almost as an abscess, and in these cases we use antibiotics for four weeks. But usually the treatment will be for two weeks with oral antibiotics.

**Richard Voegels**

Nelson?

**Nelson Augusto Rosário Filho**

The antibiotic used in the studies from Japan is a macrolide, and the effect is mostly due to its immunomodulatory effect. For example the macrolide used in cases of post-viral diffuse bronchiolitis lowers the production of Interleukin 8 and regulates the inflammatory infiltrate of neutrophils.

**Joaquim Rodrigues**

We also have to consider that currently in Japan because of this long-time use, the resistance to macrolides by pneumococci is around 80% .

**Richard Voegels**

Great. Thanks to all the members of the round table.