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DIAGNOSTIC CRITERIA OF RHINOSINUSITIS

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Abstract
Rhinosinusitis is a common and often misdiagnosed inflammatory condition affecting the nasal cavity and paranasal sinuses. Accurate diagnosis is crucial for effective treatment and to prevent complications. This article reviews the current diagnostic criteria for rhinosinusitis, differentiating between acute and chronic forms, and highlights the clinical, radiological, and laboratory methods used in modern otorhinolaryngological practice.

Keywords: Rhinosinusitis, diagnosis, nasal inflammation, paranasal sinuses, acute, chronic.

Introduction

Rhinosinusitis is a widespread and often underdiagnosed condition involving inflammation of the mucosal lining of the nasal cavity and the paranasal sinuses. It affects millions of individuals worldwide, causing significant discomfort, reduced quality of life, and productivity loss. The term "rhinosinusitis" more accurately reflects the simultaneous involvement of both the nasal passages (*rhinitis*) and the paranasal sinuses (*sinusitis*), which are anatomically and functionally interconnected.

Rhinosinusitis can occur as an acute, subacute, or chronic condition, with causes ranging from viral infections and bacterial superinfections to allergic reactions, anatomical abnormalities, and immune system dysfunction. Clinicians often face diagnostic challenges due to the overlap of symptoms with other upper respiratory tract conditions, such as the common cold, allergic rhinitis, or even migraine headaches.

Accurate diagnosis is critical not only to initiate effective therapy but also to avoid unnecessary treatments, particularly the misuse of antibiotics in viral cases. Inappropriate or delayed diagnosis can also lead to complications, such as orbital cellulitis, abscess formation, or even intracranial involvement in rare instances.

This article provides a comprehensive overview of the diagnostic criteria for rhinosinusitis based on current clinical guidelines and evidence-based practices. It outlines symptom-based classification systems, differentiates between acute and chronic presentations, and discusses the role of clinical examination, endoscopy, imaging, and laboratory tests in establishing a definitive diagnosis. By understanding and applying these criteria, healthcare professionals can improve diagnostic accuracy and optimize patient outcomes.

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Materials and Methods

This article is based on a **literature review** of current clinical guidelines and peer-reviewed studies related to the diagnosis of rhinosinusitis. The following resources were used:

- Clinical practice guidelines from the **American Academy of Otolaryngology – Head and Neck Surgery (AAO-HNS)**,
- The **European Position Paper on Rhinosinusitis and Nasal Polyps (EPOS 2020)**,
- Studies published in PubMed, Scopus, and Web of Science indexed journals between 2015 and 2024.

A qualitative analysis of symptom-based criteria, diagnostic imaging, nasal endoscopy findings, and laboratory testing approaches was performed. Comparative tables and guideline-based criteria were reviewed to identify consensus and differences among international protocols. The information was synthesized to present a practical overview for clinicians.

Main Body: Diagnostic Criteria of Rhinosinusitis

1. Classification Based on Duration and Clinical Course

Rhinosinusitis is categorized according to the duration of symptoms:

- **Acute Rhinosinusitis (ARS)**
  - Duration: **< 4 weeks**
  - Commonly caused by viruses (rhinovirus, influenza, etc.)
  - Bacterial ARS is suspected if symptoms worsen after 5–7 days or persist beyond 10 days.
  - Typical symptoms: facial pain or pressure, nasal congestion, purulent nasal discharge, and fever.
- **Subacute Rhinosinusitis**
  - Duration: **4 to 12 weeks**
  - Often represents an incomplete resolution of ARS or prolonged infection.
- **Chronic Rhinosinusitis (CRS)**
  - Duration: **> 12 weeks** without complete resolution
  - Inflammatory rather than infectious in most cases
  - May or may not include nasal polyps
  - Symptoms: nasal obstruction, postnasal drip, facial pressure, and hyposmia.

2. Symptom-Based Diagnostic Criteria

The AAO-HNS and EPOS guidelines recommend that diagnosis be based on **the presence of symptoms**, grouped into major and minor criteria.

- **Major Symptoms:**
  - Nasal obstruction or congestion
  - Purulent anterior or posterior nasal discharge
  - Facial pain or pressure
  - Hyposmia or anosmia (reduced or lost sense of smell)
  - Fever (in ARS only)

- **Minor Symptoms:**
  - Headache
  - Cough
  - Fatigue
  - Dental pain

- Ear pressure or fullness
- Halitosis

A diagnosis is made when:

- **At least two major symptoms**, or
- **One major and two or more minor symptoms**

are present for at least 10 days (ARS) or 12 weeks (CRS).

3. Objective Diagnostic Tools

While symptom assessment is essential, objective confirmation strengthens the diagnosis.

- **Nasal Endoscopy:**
  - Direct visualization of mucosal inflammation, purulent secretions, nasal polyps
  - Especially important for diagnosing CRS and treatment monitoring
- **Imaging Studies (CT Scan of the Sinuses):**
  - Gold standard for CRS diagnosis
  - Identifies sinus opacification, mucosal thickening, osteomeatal complex obstruction
  - Not routinely indicated for uncomplicated ARS
- **Microbiological Culture:**
  - Recommended in recurrent or treatment-resistant cases
  - Helps guide antibiotic selection
- **Allergy and Immunologic Testing:**
  - For CRS patients with suspected allergic or immunodeficient backgrounds

4. Special Considerations

- **Differential diagnosis:**

Conditions like allergic rhinitis, deviated nasal septum, or neoplasms may mimic rhinosinusitis. Thorough examination and imaging help avoid misdiagnosis.

- **Pediatric patients:**

In children, symptoms may be less specific, such as irritability, cough, or nasal discharge. Diagnosis relies more on physical exam and history.

- **Nasal polyps:**

Their presence suggests a more chronic, possibly eosinophilic-driven inflammatory process. Often associated with asthma or aspirin-exacerbated respiratory disease (AERD).

Diagnostic Criteria of Rhinosinusitis

Diagnosis of rhinosinusitis is primarily **clinical**, but it may be supported by **imaging** and **laboratory investigations** depending on the severity and persistence of symptoms.

1. Duration-Based Classification and Criteria:

- **Acute Rhinosinusitis (ARS):**
  - Symptoms last less than 4 weeks.
  - Most often viral in origin.
  - Sudden onset of nasal congestion, facial pain/pressure, nasal discharge (often purulent), and possibly fever.

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- **Chronic Rhinosinusitis (CRS):**
  - Symptoms persist for more than 12 weeks.
  - Involves ongoing inflammation with or without infection.
  - Nasal obstruction, facial pressure, anosmia (loss of smell), and postnasal drip are common.

2. Major and Minor Symptoms (as per clinical guidelines):

- **Major Symptoms:**
  - Facial pain/pressure
  - Nasal congestion/blockage
  - Purulent nasal discharge
  - Hyposmia/anosmia
  - Fever (in acute cases)
- **Minor Symptoms:**
  - Headache
  - Ear pain or pressure
  - Halitosis
  - Dental pain
  - Cough
  - Fatigue

Diagnosis is made when a patient presents with:

- **At least 2 major symptoms** *OR*
- **1 major + 2 or more minor symptoms**, **for more than 10 days** (in ARS) or **12 weeks** (in CRS).

3. Objective Findings:

To support the clinical diagnosis, the following may be used:

- **Nasal endoscopy:**

Direct visualization of mucosal edema, polyps, or purulent discharge.

- **Imaging (CT scan):**

Especially useful in CRS. Shows sinus opacification, mucosal thickening, or obstruction of sinus drainage pathways.

- **Microbiological testing:**

Especially in cases of treatment failure or recurrent infections, nasal or sinus cultures may be taken.

- **Allergy testing or immunological evaluation:**

For chronic or recurrent cases where allergic rhinitis or immune dysfunction is suspected.

Discussion

Rhinosinusitis remains one of the most common reasons for outpatient visits, particularly in primary care and otolaryngology settings. Despite its high prevalence, the accurate diagnosis of rhinosinusitis is often complicated by the overlap of symptoms with other upper respiratory tract conditions such as viral rhinitis, allergic rhinitis, and even migraine. Thus, clear and standardized diagnostic criteria are essential for guiding effective treatment and reducing the risk of complications or unnecessary antibiotic use.

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One of the most critical challenges in diagnosing **acute rhinosinusitis (ARS)** is distinguishing between viral and bacterial etiologies. Most ARS cases are viral and self-limiting, yet overprescription of antibiotics remains a common issue in clinical practice. The clinical presentation of bacterial ARS, characterized by persistent symptoms beyond 10 days or a "double-worsening" pattern (initial improvement followed by symptom worsening), serves as a key diagnostic indicator. However, even with these signs, a definitive bacterial diagnosis can rarely be confirmed without culture or imaging — which are not routinely recommended for uncomplicated ARS.

In contrast, **chronic rhinosinusitis (CRS)** poses a different diagnostic dilemma. It is increasingly recognized as a **multifactorial, inflammatory condition** rather than purely infectious. CRS is often associated with underlying comorbidities such as asthma, allergic rhinitis, or immunodeficiency, and in some patients, with nasal polyps. Diagnosis of CRS requires a combination of **subjective symptom criteria** (lasting over 12 weeks) and **objective evidence** such as mucosal changes seen on CT scan or nasal endoscopy. This dual requirement ensures a higher degree of diagnostic accuracy but may not always be feasible in resource-limited settings.

Radiological imaging, particularly **non-contrast CT scanning**, plays a central role in the evaluation of CRS. While not recommended for routine ARS, CT scans provide detailed information on sinus opacification, osteomeatal complex obstruction, and anatomical variants. However, incidental findings in asymptomatic individuals underscore the importance of correlating imaging results with clinical symptoms before establishing a diagnosis.

Endoscopy has become increasingly valuable, particularly for confirming CRS and identifying conditions like fungal sinusitis or neoplasms that may mimic sinus disease. It offers direct visualization of the nasal cavity and drainage pathways, and allows for targeted sampling of secretions for microbiological analysis. Nonetheless, access to endoscopy may be limited in primary care settings, especially in developing countries.

Another aspect of ongoing discussion is the role of **biomarkers** and **point-of-care tests**, which are being investigated to improve diagnostic precision. For instance, elevated levels of specific inflammatory mediators or the use of nasal nitric oxide measurements may eventually aid in differentiating between CRS subtypes or identifying eosinophilic inflammation. However, these tools remain largely research-based and are not yet standard practice.

Furthermore, **patient-reported outcome measures (PROMs)**, such as the Sino-Nasal Outcome Test (SNOT-22), are being integrated into clinical practice to assess symptom burden and treatment response. These tools enhance diagnostic monitoring, especially in chronic cases where symptom fluctuation is common and treatment goals often include quality of life improvement rather than cure.

In summary, while significant advances have been made in standardizing the diagnosis of rhinosinusitis, clinical judgment remains paramount. An accurate diagnosis requires the careful synthesis of symptom duration, severity, clinical examination findings, and — when necessary — objective tests such as imaging or endoscopy. Future diagnostic improvements may lie in the incorporation of molecular diagnostics, better phenotyping of CRS, and artificial intelligence-driven decision support tools.

Conclusion

Rhinosinusitis is a highly prevalent yet often misunderstood clinical condition that requires a structured and evidence-based approach for accurate diagnosis. The differentiation between acute

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and chronic forms is essential, as each presents with distinct pathophysiological mechanisms, clinical manifestations, and therapeutic strategies.

The use of symptom-based criteria — specifically the classification of major and minor symptoms — remains the foundation of diagnosis in both acute and chronic rhinosinusitis. However, clinical symptoms alone may not always provide sufficient specificity or sensitivity. Therefore, the integration of **objective diagnostic tools**, such as nasal endoscopy and sinus CT imaging, is critical in chronic and complicated cases to confirm mucosal disease and assess structural abnormalities.

Moreover, advances in diagnostic methods — including microbiological testing, allergy and immune evaluations, and the development of patient-reported outcome measures — provide clinicians with expanded resources for evaluating disease severity, identifying underlying causes, and monitoring response to therapy.

Despite these tools, diagnostic challenges persist, particularly in distinguishing viral from bacterial infections in acute settings and in characterizing inflammatory subtypes in chronic disease. There is a growing recognition that **rhinosinusitis is not a single disease but a heterogeneous group of disorders**, each requiring individualized assessment and management.

Going forward, efforts should focus on improving **clinical decision-making algorithms**, expanding access to diagnostic technologies, and fostering multidisciplinary collaboration between primary care providers, otolaryngologists, allergists, and radiologists. Enhancing clinician awareness of guideline-based diagnostic criteria will ultimately lead to earlier detection, more targeted therapy, and better patient outcomes.

References.

1. Fokkens, W. J., Lund, V. J., Hopkins, C., Hellings, P. W., Kern, R., Reitsma, S., ... & Toppila-Salmi, S. (2020). European Position Paper on Rhinosinusitis and Nasal Polyps 2020. Rhinology, 58(Suppl S29), 1–464. https://doi.org/10.4193/Rhin20.600
2. Rosenfeld, R. M., Piccirillo, J. F., Chandrasekhar, S. S., Brook, I., Ashok Kumar, K., Kramper, M., ... & Corrigan, M. D. (2015). Clinical practice guideline (update): adult sinusitis. Otolaryngology–Head and Neck Surgery, 152(2_suppl), S1–S39. https://doi.org/10.1177/0194599815572097
3. Sedaghat, A. R. (2017). Chronic rhinosinusitis. American Family Physician, 96(8), 500–506.
4. Orlandi, R. R., Kingdom, T. T., Smith, T. L., Bleier, B. S., DeConde, A. S., Luong, A., ... & Alt, J. A. (2016). International Consensus Statement on Allergy and Rhinology: Rhinosinusitis. International Forum of Allergy & Rhinology, 6(S1), S22–S209.
5. Tan, B. K., & Schleimer, R. P. (2017). Pathophysiology of chronic rhinosinusitis. Proceedings of the American Thoracic Society, 8(1), 115–120.
6. Brook, I. (2016). Microbiology and antimicrobial management of sinusitis. Journal of Laryngology and Otology, 130(S2), S14–S18.
7. DeMuri, G. P., & Wald, E. R. (2013). Acute bacterial sinusitis in children. New England Journal of Medicine, 368(12), 1128–1134.
8. Klossek, J. M., Ferrie, J. C., & Morgon, A. (2007). CT imaging in chronic rhinosinusitis: correlation with symptoms and surgical findings. European Archives of Oto-Rhino-Laryngology, 264(5), 537–544.
9. Smith, T. L., Mendolia-Loffredo, S., Loehrl, T. A., Sparapani, R., Laud, P., & Nattinger, A. B. (2005). Predictive factors and outcomes in endoscopic sinus surgery for chronic rhinosinusitis. Laryngoscope, 115(12), 2199–2205.

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10. Meltzer, E. O., Hamilos, D. L., Hadley, J. A., Lanza, D. C., Marple, B. F., Nicklas, R. A., & Bachert, C. (2004). Rhinosinusitis: establishing definitions for clinical research and patient care. Journal of Allergy and Clinical Immunology, 114(6 Suppl), 155–212.
11. Benninger, M. S., Ferguson, B. J., Hadley, J. A., Hamilos, D. L., Jacobs, M., Kennedy, D. W., ... & Slavin, R. G. (2003). Adult chronic rhinosinusitis: definitions, diagnosis, epidemiology, and pathophysiology. Otolaryngology–Head and Neck Surgery, 129(3_suppl), S1–S32.
12. Hwang, P. H., & Irwin, S. B. (2014). Endoscopic sinus surgery outcomes: understanding the evidence. Otolaryngologic Clinics of North America, 47(5), 795–807.
13. Bhattacharyya, N. (2011). Contemporary assessment of the disease burden of sinusitis. American Journal of Rhinology & Allergy, 25(3), 190–193.
14. Mahdavinia, M., & Grammer, L. C. (2013). Chronic rhinosinusitis and allergic rhinitis: differential diagnosis and coexistence. American Journal of Rhinology & Allergy, 27(6), 473–478.
15. Rudmik, L., & Soler, Z. M. (2015). Medical therapies for adult chronic sinusitis: a systematic review. JAMA, 314(9), 926–939. https://doi.org/10.1001/jama.2015.7540

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