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Acute purulent sinusitis: clinical course, diagnosis and treatment methods

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Abstract: This article provides a comprehensive analysis of acute purulent sinusitis, focusing on its etiology, pathogenesis, clinical course, diagnosis, and contemporary treatment methods. The study highlights the distinct characteristics of the disease across different age groups and emphasizes key aspects of differential diagnosis. By exploring modern therapeutic approaches, the article aims to enhance understanding and management of acute purulent sinusitis, offering valuable insights for clinicians to optimize patient outcomes.

Keywords: Acute purulent sinusitis, sinusitis, diagnostics, antibacterial therapy.

Introduction: Acute purulent sinusitis is a common inflammatory condition of the paranasal sinuses, often resulting from bacterial infection. It is characterized by purulent nasal discharge, facial pain, and nasal obstruction, significantly impacting patients' quality of life [1]. The etiology of acute purulent sinusitis is multifactorial, involving viral, bacterial, and environmental triggers, while its pathogenesis is closely linked to the obstruction of sinus ostia and impaired mucociliary clearance [2]. Despite advances in diagnostic and therapeutic approaches, the disease remains a clinical challenge due to its varying presentation across age groups and the need for accurate differential diagnosis to distinguish it from other sinonasal conditions [3]. This article aims to explore the clinical course, diagnostic methods, and modern treatment strategies for acute purulent sinusitis, with a focus on age-specific considerations and the importance of precise diagnosis to guide effective management.

Etiology and Pathogenesis

Acute purulent sinusitis is primarily caused by bacterial infection, often following a viral upper respiratory tract infection (URTI) that leads to inflammation and obstruction of the sinus ostia [4]. The most common bacterial pathogens implicated in acute purulent sinusitis include Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis, particularly in pediatric populations [5]. In adults, anaerobic bacteria may also play a significant role, especially in cases of odontogenic origin [6].

The pathogenesis of acute purulent sinusitis involves a cascade of events triggered by the obstruction of sinus drainage pathways. Viral URTI or allergic inflammation causes mucosal edema, which blocks the sinus ostia and disrupts normal mucociliary clearance [7]. This creates an environment conducive to bacterial colonization and proliferation. The accumulation of purulent secretions within the sinuses further exacerbates inflammation, leading to the characteristic symptoms of facial pain, nasal congestion, and purulent discharge [8].

In addition to infectious agents, predisposing factors such as anatomical variations (e.g., deviated nasal septum, concha bullosa), immune deficiencies, and environmental irritants (e.g., smoking, pollution) can contribute to the development and persistence of acute purulent sinusitis [9]. Understanding the interplay between these etiological factors and the underlying pathogenic mechanisms is crucial for effective diagnosis and targeted treatment of the condition [10-12].

Clinical Signs

O'tkir yiringli gaymorit quyidagi simptomlar bilan kechadi:

- Burun bitishi va burun orqali nafas olishning qiyinlashishi;
- Burundan yiringli ajralmalar kelishi;
- Yuz sohasida, ayniqsa, yuqori jag‘ va ko‘z atrofida og‘riq;
- Bosh og‘rig‘i, ayniqsa, boshni oldinga egishda kuchayishi;
- Isitma (38–39°C gacha);
- Umumiy holsizlik va charchoq.

Diagnostics

The diagnosis of acute purulent sinusitis is primarily based on clinical evaluation, including a detailed history and physical examination. Key diagnostic features include the presence of purulent nasal discharge, facial pain or pressure, and nasal obstruction. Anterior rhinoscopy or nasal endoscopy may reveal mucosal edema, purulent secretions, or obstruction of the sinus ostia. Imaging studies, such as computed tomography (CT) of the paranasal sinuses, are reserved for cases with suspected complications, atypical presentations, or when surgical intervention is considered. Laboratory tests, including cultures of nasal secretions, are not routinely performed but may be useful in refractory or recurrent cases to identify specific pathogens and guide antibiotic therapy.

Treatment

The management of acute purulent sinusitis involves a combination of medical therapies aimed at reducing symptoms, eradicating infection, and preventing complications. First-line treatment typically includes empiric antibiotic therapy, with amoxicillin-clavulanate being the preferred choice for most patients. In cases of penicillin allergy or resistance, alternative antibiotics such as macrolides or fluoroquinolones may be used. Adjunctive therapies, such as intranasal corticosteroids, saline nasal irrigation, and decongestants, are often recommended to alleviate mucosal inflammation and improve sinus drainage. Analgesics and antipyretics may be prescribed to manage pain and fever. In severe or complicated cases, such as orbital or intracranial involvement, hospitalization and intravenous antibiotics may be necessary. Surgical intervention, such as functional endoscopic sinus surgery (FESS), is considered for patients with recurrent or refractory disease, anatomical abnormalities, or complications. Patient education on preventive measures, including proper nasal hygiene and avoidance of environmental irritants, is also an integral part of treatment.

CONCLUSIONS

Acute purulent sinusitis is a common yet clinically significant condition that requires prompt recognition and appropriate management to prevent complications and ensure optimal patient outcomes. The etiology is predominantly bacterial, often following viral upper respiratory infections, and its pathogenesis is closely linked to sinus ostia obstruction and impaired mucociliary clearance. Clinical diagnosis is based on characteristic symptoms such as purulent nasal discharge, facial pain, and nasal obstruction, supported by physical examination and, when necessary, imaging studies.

Treatment strategies focus on a combination of antibiotic therapy, symptomatic relief, and adjunctive measures to reduce inflammation and promote sinus drainage. While most cases respond well to medical management, severe or complicated presentations may require hospitalization, intravenous antibiotics, or surgical intervention. Tailoring treatment to individual patient factors, including age and comorbidities, is essential for effective care.

Preventive measures, such as proper nasal hygiene and avoidance of environmental irritants, play a crucial role in reducing the risk of recurrence. By integrating accurate diagnosis, evidence-based treatment, and patient education, healthcare providers can significantly improve the quality of life for individuals affected by acute purulent sinusitis. Further research into the epidemiology, microbial resistance patterns, and innovative therapeutic approaches will continue to enhance the management of this condition.

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