



## Complications of Etiological Pathogenesis of Sinusitis in Young Children

**1. Sobirjonova Sarvinoz Soibjon kizi**

Received 17<sup>th</sup> May 2021,  
Accepted 19<sup>th</sup> June 2021,  
Online 26<sup>th</sup> July 2021

2nd year student of Tashkent Pediatric  
Medical Institute

**ABSTRACT:** Sinusitis is defined as an inflammation of the paranasal and nasal sinus mucosae. Chronic sinusitis is a common problem in the pediatric age group and the diagnosis and treatment are challenging due to the chronicity and similarity of symptoms with allergic rhinitis and adenoid hypertrophy. This article discusses the complications of the pathogenesis of the etiology of sinusitis in young children.

**Keywords:** Acute sinusit, cronic sinusit, recurrent sinusit, orbital complications, ostial obstruction, allergic inflammation.

In young children, sinusitis is a common, generally uncomplicated, and self limiting disease which drops with age. The diagnosis is difficult because of relatively non-specific signs and symptoms that overlap with viral upper respiratory infection and allergy. Plain paranasal sinus radiographs are not adequate, in determining the extent of involvement in recurrent or chronic sinusitis and so computed tomography has become the standard. Viral illness appears to be the most common predisposing factor. Immune defects may exist in a significant percentage of children.

Sinusitis is an infection of the sinuses. These infections often happen after a cold or with allergies. There are 3 types of sinusitis:

- Short-term (acute). Symptoms of this type of infection last less than 12 weeks and get better with the correct treatment.
- Long-term (chronic). These symptoms last longer than 12 weeks.
- Recurrent. This means the infection comes back again and again. It means 3 or more episodes of acute sinusitis in a year.

The sinuses are air-filled spaces near the nose. They are lined with mucous membranes. There are 4 different sinuses:

- Ethmoid sinus. Located around the bridge of the nose.

This sinus is present at birth, and continues to grow.

- Maxillary sinus. Located around the cheeks. This sinus is also present at birth, and continues to grow.
- Frontal sinus. Located in the area of the forehead. This sinus does not develop until around age 7.

➤ Sphenoid sinus. Located deep behind the nose. This sinus does not develop until the teen years.

When the sinuses are blocked with discharge, bacteria may start to grow. This leads to a sinus infection or sinusitis. The most common bacteria that cause acute sinusitis in young children include: *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis*. These are the most common symptoms of sinusitis in young children: Stuffy nose, thick, colored drainage in the nose, drainage down the back of the throat, headache, cough, pain or soreness over sinuses, fever, loss of smell. The symptoms of sinusitis can seem like other health conditions. Make sure your child sees their healthcare provider for a diagnosis.

A sinus infection sometimes happens after an upper respiratory infection or common cold. The cold causes swelling that can block the opening of the sinuses. This can cause a sinus infection. Allergies can also lead to sinusitis because of swelling and increased mucus. Other possible conditions that can lead to sinusitis include: abnormal shape of the nose, infection from a tooth, nose injury, foreign object in the nose, birth defect with abnormality of the roof of the mouth, problem with stomach acids, cystic fibrosis and immunodeficiency syndromes. Immune problems or antibody deficiencies are risks for chronic sinus conditions in young children.

A key concept in understanding the pathogenesis of acute bacterial sinusitis is that the mucosa of the nose and nasopharynx is continuous with the mucosa of the paranasal sinuses. This pseudostratified columnar epithelium clears mucus and other material from the sinus by ciliary action. Any process that affects the nasal mucosa also may affect the sinus mucosa. Unlike the nasal mucosa, which is heavily colonized with bacteria, the paranasal sinuses normally are sterile. The pathogenesis of sinusitis involves 3 key factors: obstruction of the sinus ostia, dysfunction of the ciliary apparatus, and thickening of sinus secretions. The narrow diameter of the sinus ostia allows for easy obstruction. The factors that predispose the ostia to obstruction may be divided into those that result in mucosal swelling and those that result in a direct mechanical effect.

The quality and character of sinus secretions play an important role in the pathogenesis of acute bacterial sinusitis. Cilia can beat only in a liquid media, and diseases such as cystic fibrosis result in very thick, viscous secretions that diminish ciliary clearance of fluid and debris from the sinus. Infection of the sinus results in thickening of secretions, compounding this process. The result of a viral upper respiratory infection is that all 3 of these factors are present: ostial obstruction, ciliary dysfunction, and thickening of sinus secretions. The viral upper respiratory infection is the most common predisposing factor to the development of bacterial sinusitis in childhood and accounts for approximately 80% of cases. Allergic inflammation underlies the remaining 20% of cases of acute bacterial sinusitis in children.

Even though they seldomly occur, the complications of sinusitis may be life-threatening. Complications can be local, orbital, and intracranial problems or combinations thereof. Orbital complications are the most frequent, and children with acute ethmoiditis are especially prone to them. To prevent permanent loss of vision, immediate and intense therapy is most important. Intracranial complications can have few symptoms, and discordance between symptoms and severity is not uncommon, which involves the importance of early radiologic diagnosis with computed tomographic or magnetic resonance imaging scans. Orbital and intracranial complications of sinusitis are medical emergencies and must be treated by specialists. Whenever possible, the underlying sinus infection should be drained at the same time. All physicians treating acute and chronic sinusitis must keep the potentially life-threatening complications of sinusitis in mind and remain suspicious because early recognition and treatment are crucial in these cases.

Complications develop in 3.7-11% of acute bacterial sinusitis cases and can be classified as orbital (60-70%), intracranial (15-20%), and bony (5-10%). Orbital complications develop most often

between 3 and 6 years of age, and intracranial complications are more frequent in adolescents. The most common complication of acute rhinosinusitis is periorbital cellulitis.

Infection may spread easily to the orbit directly through the lamina papyracea, which is very thin and may be dehiscant. It is important to be aware that orbital complications may be painless in children. It is the swelling of the eyelid and the conjunctiva, which affects the tissue anterior to the orbital septum and can be discerned easily in a computed tomography as a soft-tissue inflammation. It often occurs as a complication of upper respiratory tract infection, dacryocystitis or skin infection, and sinusitis. It presents with palpebral oedema, erythema, and fever. It is not associated to proptosis, and it does not lead to limited ocular motility. It usually responds well to antibiotic therapy, but if it is not treated early on it can spread beyond the orbital septum. In most cases, preseptal cellulitis is a clinical diagnosis that does not require evaluation with a computed tomography scan.

#### LITERATURES:

1. Anon J. B. Upper respiratory infections. Med.2010
2. Leung R. S, Katial R. The diagnosis and management of acute and chronic sinusitis. Primary Care.2007;
3. Drettner B. Pathophysiology of paranasal sinuses with clinical implications. 2017.
4. Carson J. L, Collier A. M. Acquired ciliary defects in nasal epithelium of children with acute viral upper respiratory infections'. J Med.2015.
5. Fokkens W, Lund V, Mullol J. European Position Paper on Rhinosinusitis and Nasal Polyps.2007.
6. A. Dadamuhammedov, M. Mirzarasulov. Pediatric otorhinolaryngology. Tashkent-2009.
7. A. Muminov. Diseases of the ear, throat and nose. Tashkent. 2014.
8. S. A Khasanov, N. H Voxidov. Diseases of the ear, throat and nose. Tashkent 2008