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The Role of Clinical-Morphological Genetic Factors in the Development and Course of Maxillary Sinus Cysts

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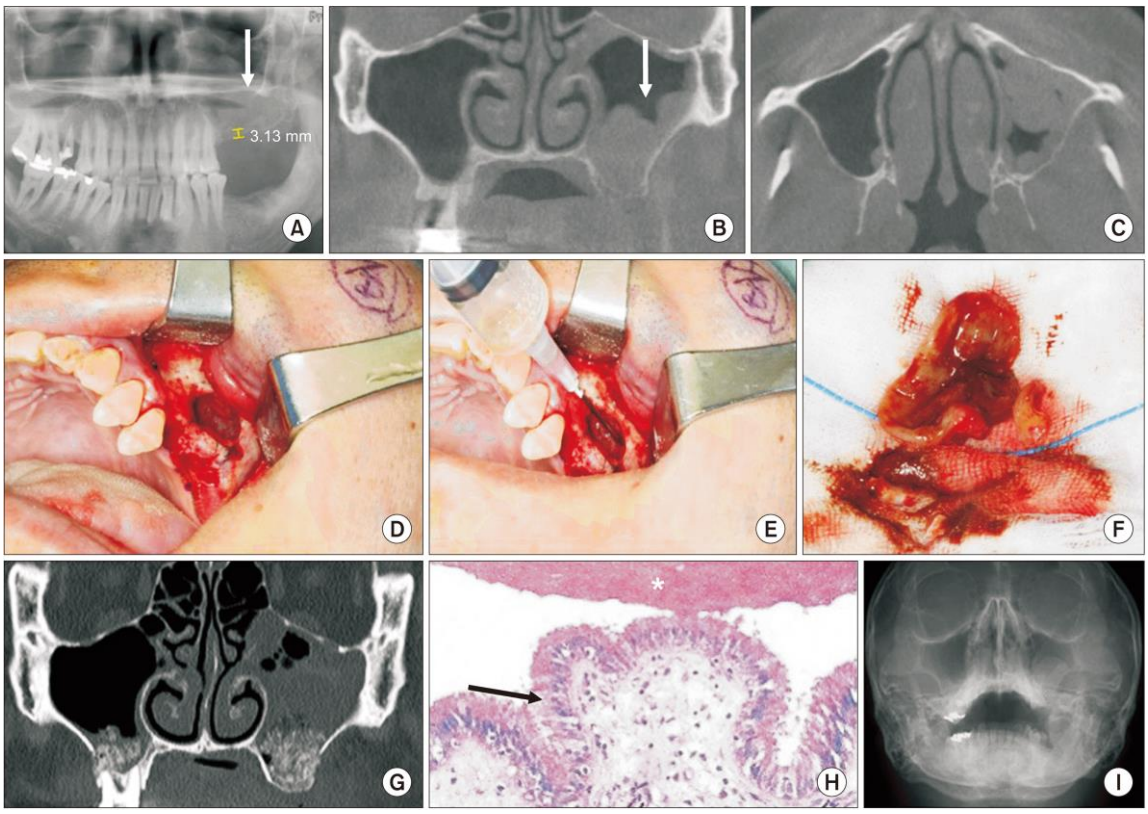
Annotation: Frontal sinusitis is an inflammation of the mucous membrane of the frontal sinus. The main symptoms of the disease are headache with an epicenter in the eyebrow and spreading to the parietal and temporal regions, discharge of purulent or mucous exudate from the nose, intoxication syndrome and loss of smell. The diagnosis is based on the results of anamnesis, general examination, rhinoscopy, radiography or computed tomography and sinus endoscopy. The treatment program includes antibacterial drugs, detoxification therapy, nasal mucosal anemia, surgical drainage of the sinuses and physiotherapy procedures. In the etiology of acute inflammation of the frontal sinuses, acute respiratory viral infections caused by rhinoviruses, adenoviruses, coronaviruses or respiratory syncytial infections play a leading role. In chronic forms, the causative agent of the infection is most often bacteria - Moraxella catarrhalis and representatives of coccal microflora (Staphylococcus aureus, Streptococcus pneumoniae) in combination with Haemophilus influenzae. In rare cases, the causative agents are pneumococci, pseudodiphtheria bacillus, and pathogenic fungi. There are a number of factors that contribute to the development of frontal sinusitis.

Keywords: Causes of frontal sinusitis,

Pathogenesis, Classification, Symptoms of frontal sinusitis, Complications, Diagnostics, Treatment of frontal sinusitis, Prognosis and prevention.

Introduction: Frontal sinusitis is a common otorhinolaryngological disease. From 24 to 32% of all episodes of hospitalization in an otolaryngology clinic are associated with pathologies of the paranasal sinuses. At the same time, about 14% of the entire adult population suffers from various forms of sinusitis. Frontal sinusitis accounts for 3-5% of inflammatory processes in the sinuses, taking the second place in terms of incidence among all types of sinusitis. In the CIS countries, the disease is observed annually in about 1-1.3 million people. Acute forms of pathology are 2-5% more common than chronic ones. The main group of patients is young people and middle-aged people aged 16 to 35 years. In men, frontal sinusitis is diagnosed somewhat more often - 55-58% of total cases.

Diseases of the upper respiratory tract. Includes acute and chronic rhinitis, adenoiditis, pharyngitis, tonsillitis, sinusitis, tubo-otitis and other pathologies that are a potential source of pathogenic microflora. In addition, this group includes pronounced growth of adenoid vegetation and benign tumors that block the opening of the sinus canal.



Immunodeficiency states. The occurrence of frontal sinusitis can occur as a result of a decrease in the body's reactivity and resistance, which is observed in AIDS, malignant tumors, massive antibacterial, radiation or cytostatic therapy, hemoblastosis, genetic abnormalities, diabetes mellitus, hypothyroidism, autoimmune pathologies.

Traumatic injuries. Inflammation of the frontal sinus can occur as a result of trauma or surgery, resulting in deformation or blockage of the excretory duct, or narrowing of the frontal sinus. This also includes developmental anomalies that lead to similar changes - a deviated nasal septum, deformation of the ethmoid labyrinth, and the middle nasal concha.

Research methods and materials: The causative agent of sinus inflammation is a violation of its normal ventilation, which occurs due to swelling of the mucous membrane of the nasal cavity,

deformation or obstruction of the excretory duct. In this case, the air flow changes from laminar to turbulent and constantly injures the mucous membrane. Complete blockage of the opening leads to a complete cessation of drainage and ventilation and the accumulation of mucous secretion. Arteries and veins pass through the opening, supplying the sinus tissue with blood. Their narrowing is due to local dystrophic reactions.

The remaining oxygen in the sinus is gradually absorbed by the mucous membrane, and the partial pressure in the sinus decreases. During hypoxia, the process of anaerobic glycolysis begins and poorly oxidized metabolic products accumulate. This creates an acidic environment, disrupting the acid-base balance, which interferes with the cleansing of the mucous membrane and further aggravates the problems of sinus drainage. In conditions of metabolic acidosis, the effect of lysozyme is completely neutralized. The combination of the listed factors creates the most favorable conditions for the proliferation of pathogenic microflora, edema and swelling of the mucous membrane.

Different types of frontal sinus lesions are classified based on the nature of the inflammatory reaction, morphological changes, duration and activity of the disease. The introduction of gradations into clinical practice allows you to choose the optimal therapeutic tactics and decide on the need for early surgical treatment. Taking into account the characteristics of the course of the disease, the following forms are distinguished:

Acute. Characterized by the duration of clinical manifestations of the disease up to 12 weeks. With high-quality treatment, complete recovery occurs without residual effects.

Recurrent. This variant is characterized by the occurrence of 1 to 4 episodes of exacerbation within 1 year, with intervals between them of at least 2 months, during which there are no symptoms of pathology and no need for treatment.

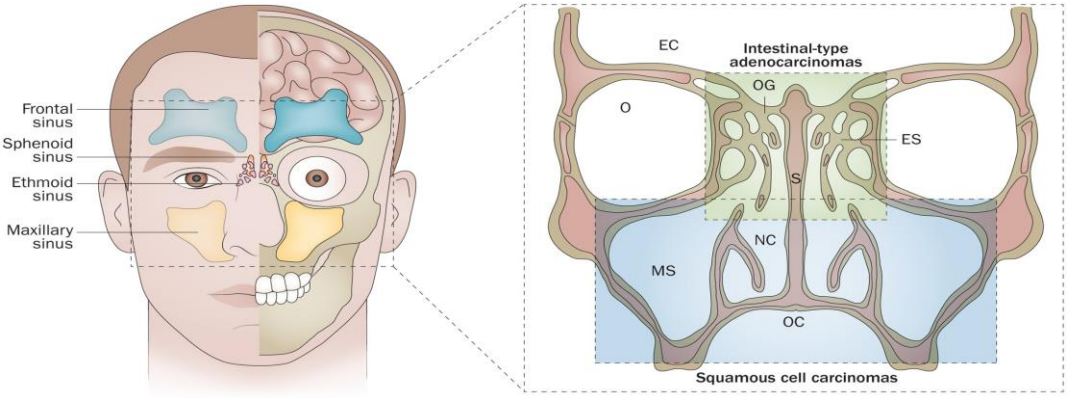
Chronic. Symptoms of the disease persist for more than 12 weeks even with conservative therapy. Relief of symptoms is achieved after surgical treatment.

To assess the morphological features of frontal sinus lesions, a modified classification proposed by BS. Preobrazhensky is used. According to it, the following types of chronic frontal sinusitis are distinguished:

Exudative. It is accompanied by the release of exudate of various nature, therefore it has subspecies: catarrhal, serous (idiopathic or similar dropsy of the sinus with obstruction of the excretory duct) and purulent.

Effective. Hyperplastic processes are observed in the mucous membrane of the sinus. There are the following options: parietal-hyperplastic (thickening of the walls), polyp (formation of polyps), cystic (formation of cysts).

Alternative. This type is characterized by destructive changes in the anatomical sinuses. Taking into account the nature of the process, they are divided into cholesteatoma, caseous, necrotic and atrophic.

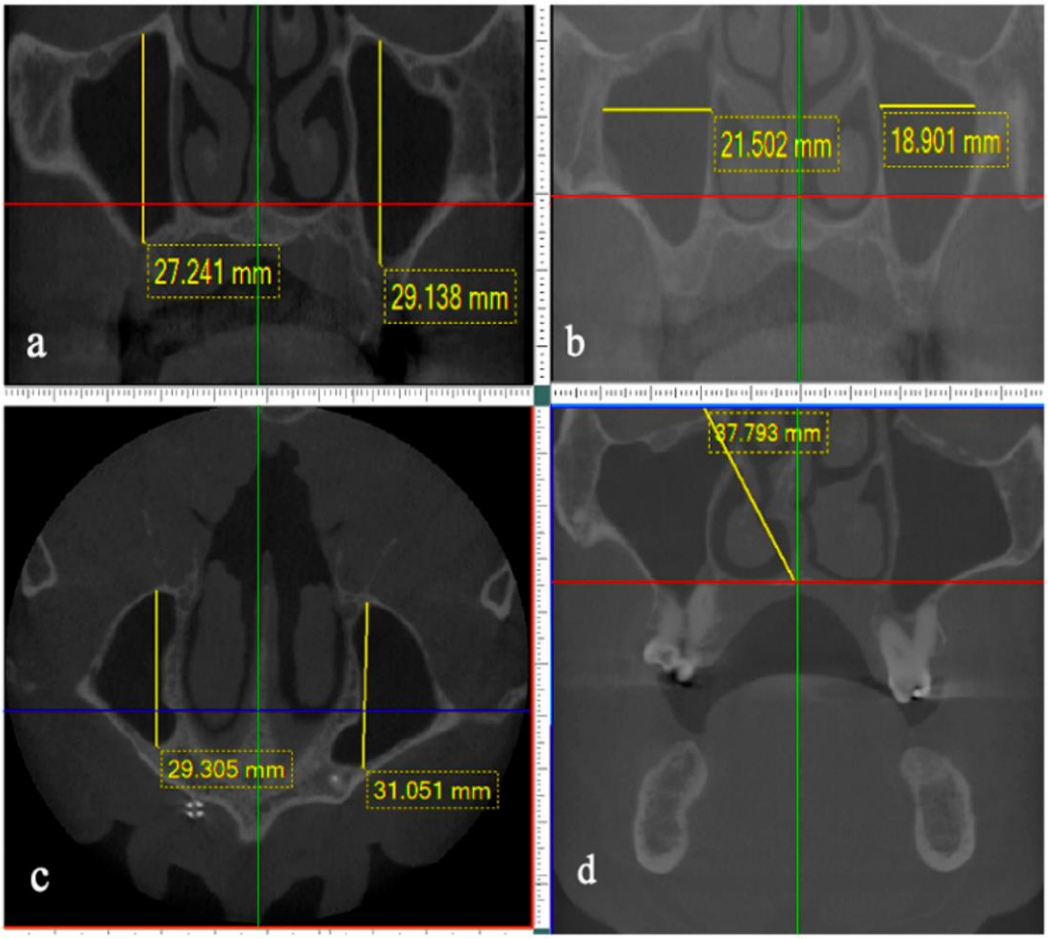


Mixed. A variant of the disease in which the previously named forms are combined: purulent-polypous, serous-catarrhal, serous-polypous, parietal-hyperplastic-polypous, etc.

Vasomotor and allergic. Types of diseases associated with vasomotor rhinitis and allergic reactions. Morphological changes and the nature of pathogenetic processes correspond to the underlying pathologies.

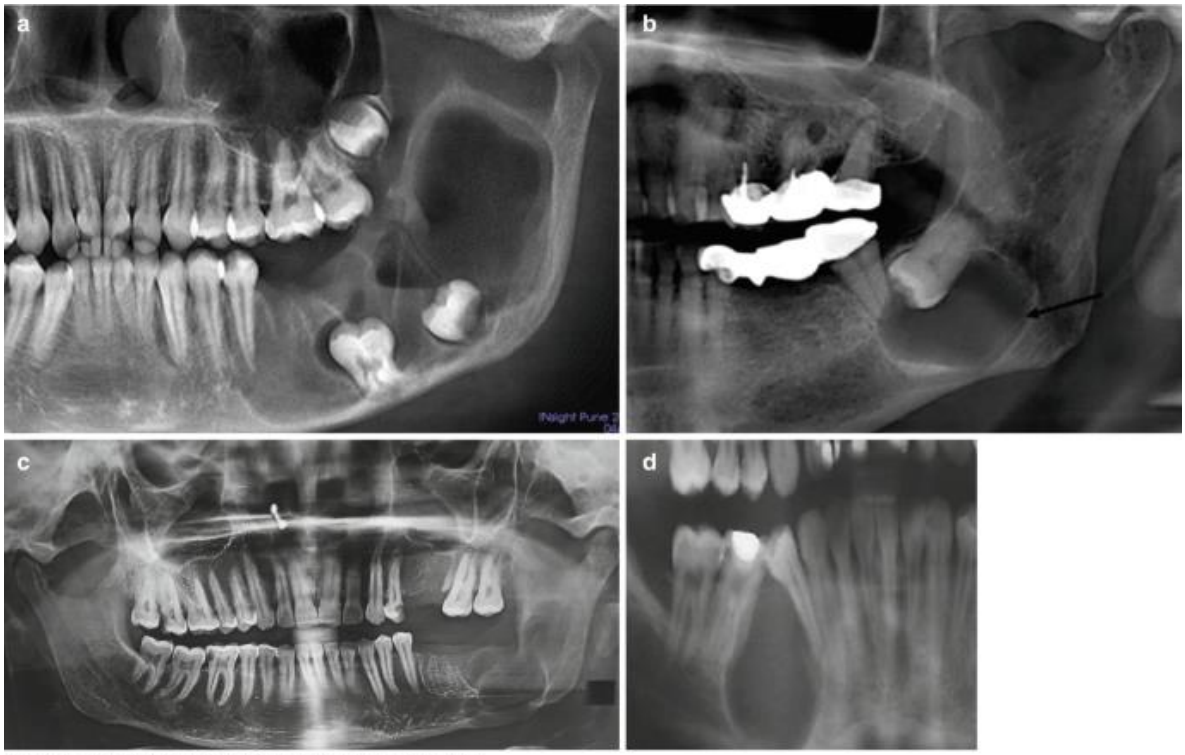
Results: The clinical picture depends on the severity of the disease. In mild forms, local manifestations are observed, mainly in combination with signs of viral rhinitis: nasal breathing and impaired sense of smell, moderate headache in the supraorbital region, mucous or purulent runny nose. Some patients complain of discomfort or burning in the medial corner of the eye. Depending on which sinus is involved in the pathological process, the symptoms are more pronounced on the right, left, or equally on both sides. Intoxication syndrome is usually absent. The clinical picture lasts up to 5 days, after which it disappears or persists simultaneously with the symptoms of an acute respiratory viral infection, which indicates the accession of bacterial flora.

Moderate frontal sinusitis is characterized by local, severe pain of a bursting, pulsating nature in the right or left superciliary region. The pain syndrome is aggravated by eyeball movement, turning the head forward or backward. If the patient prefers to sleep on his back, a sharp increase in pain is observed in the morning, which is associated with the accumulation of pathological masses. Often the pain radiates to the temporo-parietal region, accompanied by a feeling of pressure "behind the eyes". A general intoxication syndrome is detected, which is manifested by an increase in body temperature to 38.0-39.0 ° C, weakness, anxiety, increased fatigue, loss of appetite and sleep disturbance. The severe form is characterized by severe, sometimes unbearable pain, pronounced systemic intoxication, reactive swelling of the eyelids, redness and swelling of the skin in the projection area of the frontal sinus, swelling of the face. Patients often experience photophobia, lacrimation, and blurred vision.



In the chronic form, in the remission stage, the disease is characterized by the absence of symptoms or the discharge of small pathological masses from the nose on the side of the affected sinus and periodic diffuse headaches of low intensity without clear localization. The first sign of exacerbation is a feeling of "redness" or "heat" in the forehead. Then a constant pain syndrome of a dull, squeezing nature with an epicenter above the affected sinus appears. The pain can intensify at the end of the working day, after prolonged bending of the head, physical exertion, and is sometimes accompanied by a pulsating sensation. During the exacerbation period, the intoxication syndrome is mild.

Complications of the disease are associated with untimely or inadequate treatment and the presence of severe immunodeficiency. Often the infection spreads to other paranasal sinuses, causing the development of bilateral frontal sinusitis, sinusitis, ethmoiditis and sphenoiditis. As a result of the destruction of the lower wall of the frontal sinus, the process passes to the orbital tissues, which leads to orbital complications: reactive swelling of the tissues, abscess and phlegmon of the eyelid or orbit, osteoperiostitis of the orbit. If not treated in a timely manner, these complications can provoke compression and ischemia of the optic nerve and, as a result, permanent visual impairment, even blindness.



With caries of the posterior or upper wall of the sinus, intracranial complications develop, which are caused by the penetration of purulent masses and pathogenic microorganisms into the anterior cranial fossa. Arachnoiditis, meningitis, encephalitis, abscesses of brain tissue, and venous sinus thrombosis may develop. In severe cases, hematogenous spread of bacteria and their waste products occurs, causing sepsis, the formation of metastatic foci of infection in other organs - the liver, lungs, etc. All rhinogenic intracranial complications and septic conditions are associated with a high risk of death and require treatment in the intensive care unit.

The diagnosis is made on the basis of anamnestic data, physical examination results, general clinical laboratory tests, bacteriological analysis and radiological diagnostic methods. When questioning the patient, the otolaryngologist describes in detail the patient's complaints, obtains information about current symptoms, previous injuries and diseases or conditions that preceded the development of operations in the area of the nose and forehead bridge. For the purpose of a detailed examination, the following are performed:

Physical examination. Visual examination of the eyebrow area reveals hyperemia and moderate swelling. When pressing or percussion of this area, the patient notes an increase in pain. When tilting the head, in addition to a change in the intensity of the pain syndrome, a runny nose increases.

Examination of the nasal cavity. Rhinoscopy reveals the characteristic symptom of a "purulent streak" - a small amount of purulent exudate flowing from the anterior part of the middle nasal passage. The visible mucosa is slightly hyperemic and swollen.

Radiography. X-ray of the paranasal sinuses is the leading diagnostic method. To obtain the most informative radiographic image, the examination is performed in lateral, direct and posterior axial projections. Frontal sinusitis is indicated by darkening of the cavity, uneven contours of the sinus, reduced pneumatization, and the presence of defects in the bone walls.

Discussion: Computed tomography. CT of the paranasal sinuses is prescribed when the diagnostic value of radiography is low and there is a suspicion of the development of orbital or intracranial complications. The tomogram clearly shows all existing changes in the bone structures and the access canal.

Endoscopy of the frontal sinus. If it is not possible to reliably determine the nature of the pathological process in the frontal sinus and make a complete differential diagnosis using other methods, a visual examination of the entrance canal and sinus cavity is performed using a flexible endoscope.

Bacteriological examination. It is used when empirical antibacterial therapy is ineffective. The biological material used is a sample of sinus tissue obtained by puncture or trepanation, and less commonly nasal discharge. Bacterial culture allows you to accurately identify the pathogen and assess its sensitivity to the main groups of antibiotics.

Computed tomography of the paranasal sinuses. Gas-containing contents in the left frontal sinus

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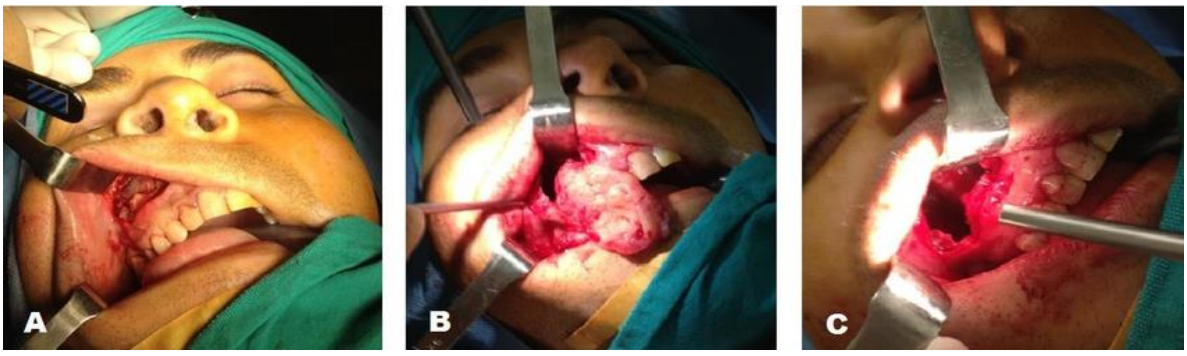

Conclusion: Moderate and severe forms of pathology require constant monitoring by medical staff, so patients are admitted to the otolaryngology department. In case of mild frontal sinusitis, outpatient treatment is possible. The main goals of therapy are to restore drainage and aeration of the sinuses, remove pathological masses, and prevent complications. The treatment plan includes:

Medications. Protected aminopenicillins are used as initial antibiotic therapy, less often - second and third generation cephalosporins. Subsequently, drugs can be replaced based on the results of antibiotic sensitivity tests. Non-steroidal anti-inflammatory drugs, decongestants, antihistamines, local antiseptics, and vitamin complexes are also used. In case of intoxication syndrome, infusion therapy with plasma substitutes and sorbents is indicated.

Surgical intervention. After the sinus is examined, the sinus cavity is washed and drained, and the endonasal opening is examined using rigid endoscopes. If necessary, open operations are performed through the anterior wall or by expanding the frontal nasal canal with resection of the anterior group of ethmoid bone cells.

Physiotherapy, conservative measures. Physiotherapy procedures for frontal sinusitis include electrophoresis with local anesthetics, phonophoresis with corticosteroids, and antibiotics on the frontal wall of the affected sinus. The nasal mucosa is regularly anesthetized with vasoconstrictor drops, rinsed with water-salt solutions, or local antiseptics.

With early, complete treatment of frontal sinusitis, the prognosis for the patient's health and life is favorable; with the formation of intracranial complications and the development of sepsis, it is doubtful. Special preventive measures against this pathology have not been developed. Nonspecific prevention is based on rational treatment of rhinitis, other forms of sinusitis and pathologies of the respiratory tract, adequate treatment of acute respiratory viral infections, timely correction of developmental anomalies, defects of the nasal cavity and excretory tract, reduced immunity of the sinuses. area and superciliary zone.

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