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TREATMENT OF PATIENTS WITH CHRONIC PURULENT MEDIUM OTITIS

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ABSTRACT

The article discusses that acute inflammation of the middle ear is an inflammatory infectious process that captures all parts of the middle ear: the auditory tube, tympanic cavity, mastoid process. According to statistics, over the past 25 years, the incidence of acute otitis media in the population does not tend to decrease. Complication and treatment of acute otitis media.

KEYWORDS: *Chronic Suppurative Otitis Media, Mastoiditis, Pathology, Complications, Treatment.*

INTRODUCTIONS

Acute inflammation of the middle ear develops as a result of damage to the mucous membrane of the tympanic cavity by both bacterial flora and influenza viruses. Microbiological studies of exudate from the tympanic cavity show that most often acute otitis media is caused by various types of streptococci, staphylococci, pneumococci and haemophilus influenzae, less often anaerobes and gram-negative microbes are found. It should be noted that the development of acute otitis media in most cases is preceded by an acute respiratory infection, in which the protective and transport functions of the ciliated epithelium of the auditory tube are disrupted, which contributes to the penetration of pathogenic flora from the nasopharynx into the tympanic cavity. Therefore, in the etiology of acute otitis media, a pathogenic combination of a respiratory virus and a bacterial agent plays a certain role.

Pathogenesis and pathological anatomy of acute otitis media

The pathogenesis of acute otitis media is closely related to the entry of pathogenic flora into the middle ear cavity. There are three main ways of infection of the tympanic cavity:

1. tubular;
2. hematogenous;
3. transtympanic.

The tubal pathway is the main one. Respiratory viral infection, which, as already noted, in most cases precedes the development of otitis media, affecting the mucous membrane of the auditory tube, disrupts the ventilation and drainage functions of the latter. As a result, the intra-drum pressure decreases and the process of exudation of fluid from the vessels of the mucous membrane of the middle ear begins, followed by the penetration of pathogenic microflora and the development of the inflammatory process. The inflammation in the middle ear is usually suppurative. However, the degree of its severity depends on a number of factors, such as:

1. Type and virulence of pathogenic flora.
2. The state of the general reactivity of the organism.
3. The existing pathology of the nasal cavity, paranasal sinuses, nasopharynx.

The inflammatory process in acute otitis media begins with edema and leukocyte infiltration of the mucous membrane, followed by the formation of exudate. The stage of serous inflammation is replaced by a catarrhal one, in which, due to the increased secretion of cells of the integumentary epithelium, the exudate becomes more viscous. Subsequently, with increased infiltration of the mucous membrane by segmented leukocytes, the latter, mixing with exudate, give it a purulent character. With the breakdown of leukocytes in the exudate, lysosomal enzymes are released, which, having proteolytic activity, are capable of disrupting the integrity of the tympanic membrane. The described changes are observed not only in the tympanic cavity, but also in the cells of the mastoid process. As purulent inflammation develops, all the air spaces of the middle ear are filled with edematous, infiltrated mucous membrane and purulent exudate. The mobility of the auditory ossicles is limited. The accumulated exudate puts pressure on the tympanic plexus and eardrum. When the tympanic membrane is perforated, otorrhea-discharge from the ear appears. The release of the tympanic cavity from exudate can also occur when the

drainage function of the auditory tube is restored. As the inflammation subsides in the middle ear, reparative processes begin (the proliferative stage of inflammation), in which there is a migration of mononuclear cells from the vessels into the tissue of the middle ear. The outcome of acute otitis media is largely associated with this stage of the disease. The perforation of the tympanic membrane can be completely healed when all three layers are regenerated. If the mucous and epidermal layers grow together at the edges of the tympanic membrane defect, then a persistent perforation remains. Under certain conditions, infiltration of the tissues of the middle ear, the presence of exudate lead to the development of an adhesive process in the tympanic cavity. The hematogenous pathway of entry of pathogenic flora into the middle ear is observed in infectious diseases (scarlet fever, measles, influenza). A feature of the course of acute otitis media with scarlet fever and measles is the necrotic nature of changes in the mucous membrane, ligaments and walls of the tympanic cavity. Necrotic changes in tissues are associated with thrombosis of the vessels of the middle ear and a sharp violation of trophism. In this case, necrotic destruction of the tympanic membrane leads to the formation of extensive perforations, as a result of which the inflammatory process passes, as a rule, into a chronic stage.

With influenza otitis media, a specific hemorrhagic form of inflammation develops, in which there is a sharp expansion of the blood vessels of the middle and outer ear, followed by the formation of extravasates due to rupture of the vascular walls. Extravasates are filled with hemorrhagic exudate and can be localized in both the outer and middle ear.

The transtympanic pathway of entry of pathogenic flora is observed with injuries of the tympanic membrane of various origins. Violation of the integrity of the tympanic membrane leads to the elimination of the tissue barrier between the middle and outer ear and the penetration of a virulent infection into the tympanic cavity.

Features of the course of acute otitis media.

The disease usually lasts 15-20 days. With certain features of the inflammatory process, the duration of the stages of the process may change. In many cases, acute otitis media ends at the stage of catarrhal inflammation, without turning into a purulent stage, and the duration of the disease is significantly reduced (7-10 days). Due to a decrease in the general reactivity of the body, irrational antibacterial therapy, the inflammatory process can take on a protracted nature both at the pre-perforated and perforated stages. The prolonged course of catarrhal inflammation of the process in the middle ear, as a rule, leads to the formation of adhesions and stiffness of the auditory ossicles. Prolonged otorrhea in acute otitis media may be associated with the involvement of the mastoid process in the inflammatory process, as well as with the proliferative nature of inflammation with the formation of granulations in the middle ear. It should be borne in mind that acute otitis media can occur with damage to the inner ear, especially of influenza origin.

In children of younger age groups, there are significant clinical differences in the course of acute otitis media, which must be known, given the frequency of this pathology. The following factors contribute to the development of acute otitis media in childhood:

1. Structural features of the middle ear: in early childhood, the auditory tube is located more horizontally, has a larger diameter and shorter length, which facilitates the penetration of

infection by the tubogenic route. The middle ear cavity contains myxoid tissue, which can quickly become involved in the inflammatory process.

2. Frequent inflammatory diseases of the lymphadenoid tissue of the pharynx and its hypertrophy, especially of the pharyngeal tonsil (adenoids).
3. Predisposition to childhood infectious diseases: measles and scarlet fever.
4. Lack of formation of acquired immunity.

In children of the first year of life, the disease begins violently. The temperature rises to 39-40 C, the child is restless, sleeps and eats poorly, cries constantly, vomiting and diarrhea may appear. In some cases, symptoms of meningism are observed due to the penetration of the infection through the ungrown fissurapetrosquamosa. In children under 6 months of age, otoscopic identification points are indistinct, the eardrum is thicker than in adults. It is not always possible with acute otitis media to see a bright hyperemia of the tympanic membrane or its protrusion. Therefore, otoscopic diagnosis in children is more difficult than usual.

Treatment of acute otitis media

Treatment of acute otitis media has features depending on the stage of the disease. Both general and local treatment is used. General treatment is associated with antibiotics. There is an opinion that at the pre-perforative stage the doctor does not have data on the type of pathogenic flora and its sensitivity to antibiotics, in addition, in 30-40% of cases, the exudate is sterile, therefore, the prescription of antibiotics should be based on data on the most common causative agents of acute otitis media, which are considered pathogenic strains of streptococci and staphylococci. In this regard, the most effective drugs for the treatment of acute otitis media are antibiotics of the penicillin series: benzylpenicillin, phenoxymethylpenicillin, ampicillin, ampicillin, oxacillin; augmentin. Benzylpenicillin is used only parenterally and requires multiple injections to maintain the required concentration. Phenoxymethylpenicillin is administered enterally; for adults, its dosage is 500 mg 3 times a day. Oxacillin belongs to semi-synthetic penicillins and is protected mainly from staphylococcal lactamases, therefore it is considered a less effective antibiotic for streptococcal infection. Of the penicillins, oral aminopenicillins have the broadest spectrum of action: amoxicillin and ampicillin. It should be noted that ampicillin creates insufficiently high concentrations in the blood serum due to the peculiarities of absorption. The most effective drug of the penicillin group is currently considered amoxicillin. It is better absorbed, has a longer half-elimination period, so it can be prescribed 2-3 times a day. Currently, a feature of the bacterial flora is the growing resistance to antibacterial drugs, especially in children who previously received antibiotics, which is reflected in the choice of antibacterial agents. In this regard, the most effective drugs are considered to be a combination of amoxicillin with beta-lactamase inhibitors, which are produced by gram-positive and gram-negative strains of anaerobic and aerobic bacteria. One of the most famous drugs in this group is augmentin, which is a combination of amoxicillin with clavulanic acid. Clavulanic acid prevents the destruction of amoxicillin by beta-lactamases. The drug is available in the form of tablets (375mg, 625mg, 1g), syrup for children (156mg-5ml) for oral administration and injection vials (0.6g, 1.2g). In severe acute otitis media, it is advisable to prescribe antibiotics of the cephalosporin series: cefazolin, cephalexin, cefazemin, claforan, zinacef, ceftriaxone, suprax. In acute otitis media, the appointment of aminoglycoside antibiotics is not recommended, since this

increases the risk of their ototoxic action. Clinical data and cytological studies prove that antibiotic therapy shortens the duration of treatment, which has a beneficial effect on the condition of the mucous membrane of the tympanic cavity and does not lead to the proliferation of fibroblasts.

The use of pain relievers is also a common treatment. Their arsenal is large enough. Basically, the most common drugs in this group are derivatives of metamizole: analgin, baralgin, pentalgin, sedalgin and others. Currently, metamizole and preparations containing it are not recommended by WHO due to the risk of agranulocytosis and are banned for use in more than 30 countries around the world. In this regard, non-steroidal anti-inflammatory drugs, one of which is Nurofen, are widely used. The action of nurofen is associated with the prevention of the synthesis of prostaglandins - mediators of pain, temperature reaction and inflammation. Nurofen is available in the form of tablets (200mg) and for children under 12 years of age in suspension for oral administration. In acute otitis media, the nurofen course is rather short (2-3 days), so side effects are extremely rare.

At the preperforative stage, thermal procedures are actively used as a local treatment in the form of warming semi-alcohol compresses, heating pads, and Solux lamps. To improve the drainage function of the auditory tube, vasoconstrictor nasal drops are prescribed: naphthyzin, galazolin, nasal, otrivin, nasol and vasoconstrictor ointments: sunaref, Simanovsky's ointment, Fleming's ointment. In the external auditory canal at the pre-perforative stage, it is recommended to instill ear drops: carboglycerol drops (5% solution of carbolic acid in glycerin), otipax, otinum, sofradex, garazone. All of the above drugs have anti-inflammatory, local anesthetic and antiseptic effects. However, they cannot be used at the perforating stage for various reasons: otipax contains 95% ethyl alcohol, sofradex is an aminoglycoside antibiotic (neomycin), carbolic acid has a cauterizing effect on the epithelium of the tympanic cavity. The appointment of UHF at the pre-perforative stage in the absence of an outflow of purulent exudate can lead to the development of complications due to the weakening of natural tissue barriers to the spread of infection from the middle ear to the inner ear and cranial cavity. If the perforated stage does not occur in a timely manner, and the patient has severe ear pain, high fever, there is a protrusion of the tympanic membrane, then on the 4th-5th day of illness, it is necessary to perform paracentesis of the tympanic membrane. The incision of the tympanic membrane is performed with a special paracentesis needle in the postero-inferior quadrant of the tympanic membrane. In children, this intervention should be carried out under Rausch anesthesia, in adults under local anesthesia. At the perforated stage, an important element of treatment is to ensure the outflow of purulent exudate from the middle ear cavities and to prevent possible inflammation of the external auditory canal. Local treatment at this stage is reduced to the introduction of sterile gauze turundas into the external auditory canal, impregnated with antiseptics (dioxidin, rivanol, sodium sulfacyl solution, nifucin), aqueous solutions of antibiotics, as well as the use of ear drops: otofa, cypromed. First, the turundas are changed 6-8 times a day, as the otorrhea decreases up to 2-3 times. At the perforated stage, UHF has a good effect.

After the otorrhea stops, the perforation of the tympanic membrane heals with the formation of a scar. If conductive hearing loss persists after the closure of the perforation, then a course of treatment is carried out aimed at preventing the development of the adhesive process in the

middle ear: blowing and catheterization of the auditory tube, pneumomassage of the tympanic membrane, endaural electrophoresis of lidase.

Complications of acute otitis media

Mastoiditis

Mastoiditis develops as a complication of acute otitis media and is an inflammation in the bone cells of the mastoid process. The pathogenic flora, as a rule, are the same pathogens that caused the development of acute otitis media. Inflammation of the mucoperiosteum of the mastoid cells is always observed with purulent inflammation of the middle ear, however, the transition of the inflammatory process to the bone tissue with its subsequent destruction is associated with the following reasons: a decrease in general and local immunity, high virulence of the pathogenic flora and impaired outflow from the mastoid process through aditus ad antrum, due to edema of the mucous membrane. Pathological changes in the mastoid process begin with inflammation of the mucoperiosteum and the formation of serous or serous-purulent exudate in the cells of the mastoid process. In the future, the process involves bone intercellular bridges, which, due to osteitis, are destroyed with the formation of cavities filled with pus. Along with purulent fusion of bone tissue, granulation tissue appears in the cells. It should be noted that destructive changes do not occur simultaneously in different groups of air cells, therefore, during the operation, a thorough revision of all parts of the cellular system is required.

Clinical course of mastoiditis

By the end of the second week, a patient with acute otitis media shows signs of deterioration: the body temperature rises again, pulsating pain in the ear and profuse purulent discharge appear. In the blood test, neutrophilic leukocytosis, a shift in the leukocyte formula to the left, an increase in ESR are noted. During otoscopy, the following symptoms are observed: a large amount of thick, pulsating pus, which quickly fills the ear canal; the tympanic membrane is sharply hyperemic and infiltrated; overhang of the posterior-superior wall of the external auditory canal in the bony section due to inflammation of its periosteum. Of the local symptoms, soreness on palpation of the mastoid process, smoothness of the skin fold behind the ear, pasty soft tissues of the behind the ear region are important.

In the diagnosis of mastoiditis, radiography of the temporal bones in the projections of Schüller and Mayer and computed tomography of the temporal bone in axial and coronary projections are of great importance.

The clinical course of mastoiditis can have many features. So, in the elderly, an atypical course is often observed, when otorrhea and pain on palpation of the mastoid process are absent.

Treatment of mastoiditis

Mastoiditis is a surgical complication of acute purulent otitis media. Conservative treatment is possible only at its initial stages and it does not fundamentally differ from treatment at the perforated stage. From antibiotics, preference is given to drugs of the cephalosporin series and lincomycin.

With mastoiditis, a surgical intervention is performed - antromastoidotomy. Operation antromastoidotomy is sanitizing and is aimed at eliminating the focus of purulent inflammation

in the region of the base of the skull. Local infiltration anesthesia is considered the preferred type of anesthesia for middle ear surgery, since during the intervention, control over facial function is necessary to prevent injury to the facial nerve. In children, patients with severe concomitant pathology: diabetes mellitus, hypertension, coronary heart disease, mental disorders, the operation is performed under general anesthesia. An incision in the behind-the-ear region is made parallel to the behind-the-ear fold, 0.5 cm away from it. With the help of a raspator, the mastoid area is separated so that all the contours of the Shipot triangle (temporal line, spina Henle, apex of the mastoid process) are indicated. Trepanning is carried out using Voyachek's chisels, chisels or a special drill. At the first stage of trepanation, the antrum is opened, at the second stage, a thorough revision of all the cells of the mastoid process is performed, during which pathologically altered tissues (granulation, softened walls of bone cells) are removed. As a result of the operation, a cavity is formed, which heals by secondary intention, so the wound is not sutured. In case of large destruction and, accordingly, the formation of a large cavity, in some cases, it is possible to perform "plastic surgery" with a muscle-fascial flap taken from the temporal muscle. The postoperative period in patients with mastoiditis lasts for a month, when the postoperative cavity closes, purulent discharge from the ear stops and hearing is restored.

With special forms of mastoiditis, antromastoidotomy has its own characteristics. With squamite and zygomaticitis, surgical revision of the cells of the zygomatic process and scales of the temporal bone is necessary. The most difficult surgical approach for petrositis, when it is necessary to open perilyabyrinth inflammation foci. With special forms of mastoiditis, associated with the breakthrough of pus into the soft tissues of the neck, along with antromastoidotomy, an opening of the neck phlegmon is performed with a thorough revision of all purulent leaks and the setting of drains.

Features of the defeat of the mastoid process in children are associated with the fact that the latter is formed by the age of 3, and only antrum is involved in the inflammatory process before this age. The course of antritis can be complicated by a subperiosteal abscess. Antritis treatment can be conservative and surgical. With conservative treatment, along with antibiotic therapy, it is recommended to perform anthropuncture for therapeutic and diagnostic purposes. Surgical treatment is associated with performing an antrotomy operation.

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