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Treatment of sore throat in children over 5 years of age

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Sore throat is a frequent complaint of children. Another aspect considered in this article is the issue of untimely and groundless prescription of antibacterial therapy to children, as it may result both in allergic reactions and toxic effect on the body in whole. Children of all age groups are rather sensitive to pain. In case of an acute complaint, there must be an effective drug, which may safely be used in children. The article examines various pharmaceutical forms of drugs for sore throat treatment and appraises their advantages, disadvantages and usability in children over 5 years of age in detail.

Keywords: *sore throat, pharmaceutical form, children over 5 years of age, lozenges, spray, antibacterial therapy.*

Sore throat is a rather frequent symptom occurring in children of all ages [1, 2]. It usually results from an acute respiratory infection caused by bacteria or viruses. Sore throat is often accompanied by body temperature increase over 38.3°C and appetite disorder; it may also be characterized by labored breathing or swallowing and temporary voice loss [3].

Sore throat causes differ by children's age, season and climate. Most frequently, it is caused by viruses; however, bacteria are more dangerous. Bacteria and viruses are easily transmitted from one child to another via grimy hands, when an ill child touches a door handle, phone, toys or even the nose, which are later touched by a healthy child, and by air [3, 4].

Other widespread non-infectious causes of sore throat are inhalation of dry cold air with mouth (not only with nose), especially in winter, and allergy (allergic rhinitis). Sore throat in children may also be caused by swallowing a foreign body (toys, coins, food), which gets stuck in throat, esophagus or respiratory tract [3].

It is common knowledge that viruses cause ca. 90% of acute respiratory diseases, one of the symptoms of which is sore throat [5]. However, pediatricians and therapists prescribe antibacterial therapy untimely due to the fear of development of complications. The rate of ungrounded application of antibiotics at acute respiratory infections in Russia is ca. 70%. According to the World Health Organization (WHO), up to 75% of antimicrobial drugs are used irrationally [6, 7].

Antibiotic resistance may form as a result of prescription of antibacterial therapy, which is why prescription of toxic antibiotics might be required in case of life-threatening diseases.

Complications of antibacterial vary considerably: from latent discomfort to severe conditions and even fatal outcomes. Thus, for instance, allergic reactions to antibiotics are more often observed in sensitized people and are less frequent in people with congenital intolerance to one or another drug. Allergic reactions usually occur in case of repeated administrations of drugs, even with small antibiotic dosage. Increase in sensitivity to the drug may remain for a long time; there have also been cases of reactions to the structurally similar drugs (crossed sensitization). Severe symptoms of the anaphylactic shock type are observed far rarer (according to the WHO, there is 1 case of anaphylactic shock per 70,000 applications of penicillin) [6].

Toxic effect of antibacterial therapy may be connected with disorder of the enzyme systems of body, which take part in the antibiotic's metabolism; this results in accumulation of the antibiotic in the body (effect of drug's cumulation). Antibiotics may toxically affect nervous system

(polyneurites, palsies, cochlear neurites (even total deafness)), blood, marrow (acute hemolysis, reduction in the number of granulocytes, marrow exhaustion), kidneys and liver (dystrophies of these organs with functional incompetence phenomena); they may also have local toxic effect (development of necroses in the antibiotic's administration site (when in strong concentration) [5].

Dysbacteriosis and candidiasis are the complications that may be caused by any group of antibiotics at long-term and/or multifold administration of the drug.

Given the possible complications and ungrounded application of antibacterial therapy, in most cases of sore throat it is effective and rational to prescribe symptomatic therapy, not pathogenetic (antibacterial) therapy.

All children are rather sensitive to pain regardless of age. Children whimper, become anxious and refuse to speak with adults. Preschoolers avoid eating and cling to parents for additional emotional support in case of sore throat. Appetite and sleep disorders are observed in children of all ages [2].

Acute sore throat requires prompt help to the child. Modern symptomatic means feature various topical preparations in the form of spray, lozenges or mouth rinses. Topical preparations consist of one or several antiseptics (chlorhexidine, hexetidine, iodine preparations, amylmetacresol and dichlorobenzene), essential oils, topical anesthetic and deodorant preparations. The preparation may also include bacterial lysates, natural antiseptics, synthesized factors of non-specific protection of mucous tunics with antiviral effect (lysozyme, interferon) and vitamins (ascorbic acid) [4].

Apart from efficacy, requirements to the preparations applied to mucous tunics include:

- Absence of toxic effect and low rate of absorption from mucous tunics;
- Low allergenicity;
- Absence of irritant action on mucous tunic [4].

The most frequently used drugs for sore throat in children are sugar-free Strepsils for children over 5 years of age, Lysobact, Hexoral (in lozenges), Tantum Verde and Bioparox (tb.).

Let us consider different pharmaceutical forms, their advantages and disadvantages.

1. Drugs in the form of **spray** have the least contact with pharyngeal mucous tunic, as part of the drug is swallowed. The drug is spread over mucous tunics unevenly, thus, active components do not affect the hard-to-reach segments of mucous tunic of mouth cavity and pharynx [1, 7].
2. Drugs in the form of **mouth rinse** have the least contact with pharyngeal mucous tunic and the shortest duration of the active components' action among all the pharmaceutical forms [1, 7].
3. Unlike other pharmaceutical forms, **lozenges** provide effective spread of the active ingredient over the mucous tunic's surface, including even the hard-to-reach segments. Lozenges have the longest duration of the active components' action among all the pharmaceutical forms [1, 7].

One of the most popular drugs in the Russian Federation is Strepsils (lemon) for children over 5 years of age indicated for treatment of infectious and inflammatory diseases of mouth cavity and pharynx in children over 5 years of age [8]. The drug has antiseptic action. It is active against gram-positive and gram-negative microbes, has antiviral and antimycotic activity and helps to remove the mucous tunic's reddening and facilitates pain syndrome [9]. It is sugar-free, therefore, it is convenient for the people with restricted sugar consumption (e.g., diabetics) and the children undergoing teeth formation with risk of caries.

Strepsils (lemon) for children over 5 years of age features rapid effect – its action starts 5 minutes after intake and continues for up to 2-3 hours; this is especially important for those children, who endure pain syndrome rather emotionally with high risk of behavioral disorders [2].

It should be noted that children over 5 years of age happily take this drug thanks to the convenient pharmaceutical form and fine taste: timely and regular intake of the drug as necessary during the day without parental pressure promotes rapid achievement of therapy efficacy.

Thus, it is important to remember that antibacterial drugs, which are often groundlessly used in case of sore throat in children, may cause negative consequences – from allergic reactions to toxic affection of the body (in case they are being used over a long period of time). Another aggravation is that the intake of antibiotics for a long period of time leads to the formation of resistance of the body; this results in the need of using more toxic antibacterial drugs in the future.

Symptomatic therapy means proved their efficacy and safety at sore throat in children. Lozenges Strepsils for children over 5 years of age are the most convenient and optimal form of application in children, as they do not cause feeling of burning and discomfort when used correctly (movement of a lozenge inside the mouth cavity during dissolution), spread evenly over the pharyngeal mucous tunic and have a sufficiently long duration of action – up to 2-3 hours. They are sugar-free, which is why they do not cause caries, and have a fine taste thanks to its components. Therefore, this drug may be recommended for treating sore throat in children as the first choice drug.

Table. The main drugs used at sore throat

Name	Strepsils for children over 5 years of age	Lysobact	Hexoral	Tantum Verde	Bioparox (topical antibiotic)
Pharmaceutical form	Lozenges	Lozenges	Lozenges Spray Mouth rinse	Lozenges Spray	Spray
Active ingredient	2.4-dichlorobenzene + amylmetacresol	Lysozyme hydrochloride Pyridoxine hydrochloride	Hexetidine	Benzydamine	Fusafungine
Sugar content	No sugar	Contains sodium saccharinate	Contains sodium saccharinate	Contains aspartame	Contains saccharine
Side effects	Rarely: allergic reactions	Rarely: allergic reactions	Increased sensitivity; Taste disorder	Burning; Laryngospasm; Numbness; Skin eruption	Pricking in nasal cavity and pharynx; Eye edema; Pruritus; Urticaria; Quincke's edema; Episode of bronchospasm; Dyspnea; Laryngospasm; Angioneurotic edema; Anaphylactic shock

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