

Microbial Sensitivity to Antibacterial Drugs Used in the Treatment of Neodontogenic Abscesses and Phlegmons of the Maxillofacial Region in Children

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Abstract: Treatment and prevention of inflammatory diseases of the maxillofacial region in children represent one of the main problems of paediatric dentistry. According to the data of numerous authors purulent-inflammatory diseases of maxillofacial region make up to 21% of all surgical and 52% of dental diseases of childhood.

Key words: antibacterial therapy, neodontogenic abscesses, maxillofacial region, children.

Introduction. High frequency of purulent-inflammatory diseases of maxillofacial region in children is explained by the fact that children's organism has a number of peculiarities such as relatively immature immune organs, abundance of lymphatic tissue, ease of damage and increased permeability for pathogenic microorganisms. Acute neodontogenic purulent diseases of the maxillofacial region occupy a leading place in maxillofacial surgery. Before the introduction of antibiotics the frequency of these diseases was extremely high in the subsequent period began to decrease, but in recent years a tendency to increase (59-60%) is noticed. The main reason for this is the growth of mono- and polyresistant microbes, neodontogenic changes in virulent factors, etc. Also significant changes on the part of macroorganisms, which is mainly expressed in changes in the immune system, under the influence of various environmental and social factors, has become one of the reasons for the increase in inflammatory diseases of this kind. Thus, according to M. Azimov (2021), the number of patients with neodontogenic inflammatory diseases of the maxillofacial region treated in the department of paediatric maxillofacial surgery of TGSi has doubled in the last 10 years. It is well known that the causative agent of neodontogenic inflammatory processes, including neodontogenic phlegmons, are microorganisms, which are considered the main representatives of the permanent microflora of the oral cavity, such as staphylococci, streptococci, enterococci, diplococci, gram-positive and gram-negative bacilli, fungi, mycoplasmas, protozoa, spirochetes (Veselov A.Ya, 1990; Gostishev V.K, 2006). Thus, the infectious-inflammatory process is a manifestation of the interaction of pathogenic flora with the macroorganism in the form of its ability to respond to the impact of this microflora. It is known that most clinicians of health care workers show great

interest in determining the sensitivity of microbes to drugs, i.e. antibioticograms. Apparently, this is not accidental, as a qualified clinician is fully aware that antibioticogram allows the doctor to prescribe the most effective drugs. Based on this, we set ourselves the goal of studying the microflora and its properties in children with neodontogenic phlegmons of the maxillofacial region.

In recent years, scientists have developed a whole arsenal of methods for determining the sensitivity of microbes to drugs, such as: the method of serial dilutions, the method of discs and others. Among these methods, the disc diffusion method is favoured in most cases, as it is the most convenient, easy to perform, economical and accurate in the results (Mukhamedov I.M, 2016).

Material and research methods : Retrospective 2019-2022 case history. For the staging of this research method, we prepared 18 hour microbial cultures, taking into account the most typical inhabitants of the oral cavity, abscesses and phlegmon. On the surface of dried nutrient medium Muller Hinton applied 1-2 ml of the studied microbes (turbidity standard 1.0×10^5), then evenly distributed by rocking the cup (sowing "lawn"), the excess was removed in disinfectant solution. In parallel, in separate vials prepared solutions of drugs to be tested with regard to the therapeutic dose: Reosarbil, Succinasol, Microdocin, Decasan, Sodium chloride, Furacilin, Levomikol, Terasorb, Ascorbic acid and IRS-19. It should be noted that IRS-19 is being tested in Uzbekistan against this disease for the first time. In the annotation of this preparation it is emphasised that it has antiseptic, antifungal, antiparasitic, antiviral (Herpes); After completion of sowing, Petri dishes were dried at room temperature for 10-15 minutes. Then sterile paper discs (like antibiotic discs) prepared from filter paper were taken with tweezers, soaked in drug solutions and placed on the surface of the nutrient medium with microbial cultures. The dishes were covered and placed in a thermostat at 37°C and incubated for 18-24 hours. At the end of the incubation period, the cups were removed from the thermostat and the results were counted. For this purpose, the cups were placed on a dark surface and the diameter of the zone of microbial growth retardation around the discs, including the size of the discs themselves, was measured to the nearest 1 mm using a ruler.

Results of the study. Analysis of the obtained materials of the study on the study of antibacterial activity of medicinal therapeutic preparations. The drug Reosarbil had a reliable effect on 2 types of microbes, these are *Escherichia coli* lactopositive strains and *Str. hemolyticus*. All other flora showed a weak effect with a radius of action from 14.0 ± 0.1 to 19.0 ± 0.1 CFU/mm. At the same time, Succinasol had a pronounced effect on such microbes as *Str. Pyogenes* (28.0 ± 0.3 mm) and *Str. Hemolyticus* (27.0 ± 0.2 mm). Though it cannot be ignored that 50% of the microbes taken for the trial were insensitive to this drug. However, the preparations Microdacin and Decasan had a medium degree of effect on 5 species of microbes, and all the remaining flora actually in 50% of cases were insensitive to this drug. At the same time, the study of antibacterial activity of the preparation IRS-19 showed a high degree of influence, so from the studied 10 species of microbes on 7 species of microbes had a highly reliable effect with a diameter from 20.0 ± 0.1 to 31.0 ± 0.3 mm, and only the culture of *Staph. epidermidis* was insensitive. The widely used antiseptic Furacilin, had a significant antibacterial effect on 3 microbe species, these were Enterococci, *Str. Hemolyticus* and *Pseudomonas*. All other flora had an average effect with diameters ranging from 10.0 ± 0.1 to 19.0 ± 0.1 mm. However, Levomekol preparation had a highly significant effect on all the microbial groups studied, with diameters ranging from 25.0 ± 0.2 to 37.0 ± 0.3 mm. At the same time, Terasorb preparation had a reliable antibacterial effect on 3 types of microbes: *Staph. epidermidis*, *Proteus* and *Str. Hemolyticus*, all other flora were of medium sensitivity and ranged in diameter from 15.0 ± 0.1 to 19.0 ± 0.1 mm, and fungi of the genus *Candida* showed resistance. The drug, Ascorbic acid had an antibacterial effect on 2 species of microbe: *Esch. Coli LP*, and *Proteus vulgaris*, the rest of the flora was of medium sensitivity which ranged from 9.0 ± 0.1 to 19.0 ± 0.1 mm.

Conclusions: Thus, based on the conducted microbiological studies devoted to the study of antibacterial activity of the therapeutic preparations and the data obtained in this study. Most of the tested drugs showed average antibacterial activity, which ranged from 10.0 ± 0.1 to 18.0 ± 0.1 mm. However, the preparations IRS-19 and Microdacin showed high antibacterial activity on the majority of tested microbes, in this connection we propose to widely use these preparations for rendering special treatment in children with purulent-inflammatory diseases in maxillofacial region.

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