UDC 615

AMINOGLYCOSIDE ANTIBIOTICS

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Annotation. Aminoglycosides are a group of antibacterial drugs widely used in clinical practice for the treatment of infectious diseases. However, their use is associated with a number of problems: toxicity, pharmacokinetic characteristics and microbial resistance. The drug in this group includes streptomycin, produced by the radiant fungus. Subsequently, its derivatives were obtained.

Keywords: bacteria, aminoglycoside, antibacterial, antibiotic, toxicity.

The drugs have a wide spectrum of action, have a detrimental effect on most gram-positive and some gram-negative microorganisms, acid-fast (the causative agent of tuberculosis) and penicillin-resistant bacteria, some strains of Proteus, Pseudomonas aeruginosa, Brucella. They act bacteriostatically, less often bactericidally as a result of inhibition of protein synthesis in the ribosomes of microbial cells. Usually by the end of a month of treatment, but possibly within a few days, addiction to streptomycins develops. When administered parenterally, they are well absorbed and distributed in organs and tissues. The therapeutic concentration is maintained for 8-12 hours. It is excreted in the urine; if renal function is impaired, excretion slows down.

Streptomycin sulfate - Streptomycini sulfas. White powder. Easily dissolves in water. Stable in a slightly acidic environment, does not collapse in an alkaline environment and when heated. Prescribed for brucellosis, leptospirosis, tularemia, diplococcal infections, mastitis, endometritis, endocarditis, meningitis, wound and postpartum sepsis, erysipelas and edematous disease of pigs, actinomycosis of cattle and other diseases caused by microorganisms sensitive to it. It is administered mainly deep intramuscularly, sometimes used intratracheally and externally.

Pasomycin - Pasomycinum, powder, easily dissolves in water, is destroyed by heating, in acidic and alkaline environments and under the influence of light. Prescribed for tuberculosis, pneumonia, purulent processes. Microbial resistance to the drug develops more slowly than to other aminoglycosides. They are usually used for severe infections, as well as when other antimicrobial drugs are insufficiently effective. Side effects include nephrotoxicity and ototoxicity, as well as the ability to increase the toxicity of other drugs. With long-term use, candidomycosis may develop.

Neomycin sulfate (colimycin, etc.) - Neomycini sulfas. White powder, easily soluble in water, hygroscopic. Effective against many gram-positive (staphylo- and pneumococci, etc.) and gram-negative microbes, including those resistant to other antibiotics. It does not affect pathogenic fungi, viruses and anaerobic microflora. Resistance develops slowly. When administered orally, it is almost not absorbed and has a detrimental effect on the intestinal microflora. It is excreted mainly in feces and partly in urine. Prescribed for colibacillosis, pasteurellosis, gastroenterocolitis and other diseases of the gastrointestinal tract. Externally used for skin diseases caused by staphylococci and escherichia. Neomycin is included in the ointments “Sinalar-N” and “Locacorten-N” and eye and ear drops “Sofradex”. Monomycin - Monomycinum. A mixture of organic base sulfates produced by actinomycetes. Powder or mass. Easily dissolves in water. It has a bactericidal effect on staphylococci, dysentery bacilli, Escherichia, Klebsiella, and some protozoa (Leishmania, Toxoplasma, dysenteric amoebas). Weak effect on pneumococci and streptococci. Does not affect anaerobes, fungi and viruses. When taken orally, it is poorly absorbed; when administered intramuscularly, it penetrates well into organs and tissues. Prescribed mainly for colibacillosis, dyspepsia, dysentery, salmonellosis, and urinary tract infections.

Kanamycin - Kanamycinum. Produced in the form of salts of kanamycin monosulfate for oral administration and kanamycin sulfate for parenteral

administration. White crystalline powders, easily soluble in water. The drug has a broad spectrum of action, has a detrimental effect on microbes resistant to penicillin, tetracycline, chloramphenicol and erythromycin. Kanamycin monosulfate is prescribed for dysentery, enterocolitis, as well as for intestinal sanitation in preparation for operations on the gastrointestinal tract.

Gentamycin sulfate (Amgent, Garamycin) - Gentamycini sulfas. White powder with a creamy tint. Easily dissolves in water. Like other aminoglycosides, it has a wide spectrum of action and also has a bacteriostatic effect on mycoplasmas, Proteus, E. coli, salmonella and staphylococci resistant to penicillin. When administered intramuscularly, it is quickly absorbed, a therapeutic concentration in the blood is created approximately 1 hour after application and persists for 8-12 hours. Prescribed for many severe infectious diseases, such as bronchopneumonia, peritonitis, septicemia, wound infection and especially for diseases of the gastrointestinal tract in young animals and birds. It is good to combine with ampicillin, carbenicillin.

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