

SYSTEMATIZATION OF SIDE EFFECTS OF DRUGS

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Introduction. The number of people who can't tolerate from one to several medicines increases every year. Side effects occur in 18-40% of patients taking the drugs, but serve as a reason for asking for a medical help only at 4-6% of patients. Besides this, the side effects lead to deaths in 8% of patients who has been located on outpatient treatment and up to 5% of patients who has been hospitalized. The reason of the increasing of side reactions often is in the unreasonable and irrational using of medicines, because it is justified only in 13-14% of cases, in 23% it is doubtfully and questionably and in 63-64% it is inappropriate.

Aim. Systematization of side effects of drugs with using etiopathogenic side effects classification.

Materials and methods. Medicines, statistical methods of information processing.

Results and discussion. Toxic effects. The overdose of medicines causes toxic effects. It, in its turn, has a number of reasons: the conscious using of large doses of medicines; the characteristic of pharmacokinetics of medicines (for example, the increased concentration of medicines in the blood plasma, caused by genetic changes); the existence of accompanying illnesses; the increase of absorption of medicines (for example, taking drugs to "empty" stomach); the discrepancy dose to human weight; interactions of drugs - accumulation (material and functional); the modification of the sensitivity of molecules-targets to different medicines; specific toxicity of drugs.

Side effects , which caused on the pharmacological properties of the drugs are divided into basic (for example, atropine, used to treat bradycardia, causes mouth dryness, dilated pupils, increased intraocular pressure, slowing intestinal motility), and indirect, such as goiter, superinfection, the emergence of resistant strains of pathogens , suppression of immune processes and others.

Allergic reactions. Allergic reactions account from 20 to 70% of all side effects. As a rule, It doesn't develop at the first reception of drugs. The classification of Jell and Coombs identifies four main types of reactions: anaphylactic-type (immediate type), cytotoxic-type, immune complex-mediated reaction and delayed or cell-mediated reactions are mediated by special immune cells called the T-cell lymphocytes. In 78-80% of patients, the drug allergy ends in recovery, and in 10-12% of cases it takes a chronic course in the form of topical asthma, recurrent agranulocytosis and drug hepatitis. In 0.005% of cases, a lethal outcome is possible, the most common cause of which is anaphylactic shock.

Pseudoallergic reactions. Pseudoallergic reactions may have similarities in clinical manifestations with allergic reactions, but their development is not associated with changes in the immune system. The major importance in their pathogenesis is the release histamine, liberin and other mediators of allergy by labrocytes with the deficit of the C₁ component of complement. Pseudoallergic reactions can be caused by muscle relaxants, opioids, iodine-containing radiopaque substances, and others. The severity of pseudoallergic reactions depends on the dose of drugs.

Idiosyncrasy. Idiosyncrasy is a genetic disease which is manifested in defects of enzyme systems and increased sensitivity to a particular drug. For example, the development of methemoglobinemia in patients with methemoglobin reductase deficit at admission of nitrates. With hereditary insufficiency of blood serum cholinesterase, lactation of dithiline is associated to 2-3 hours.

Psychogenic reactions. Psychogenic reactions include drug dependence (mental and physical). Physical dependence always proceeds with the phenomenon of abstinence. It is characteristic, first of all, for drugs that have a narcotic effect.

Iatrogenic effects. Iatrogenic effects are negative reactions provoked by a medical worker. An example can be not only the negligence of the doctor, but also the incorrect performance of medical appointments due to typos and smearing handwriting. Intentionally induced iatrogenesis occurs when some specialists use intimidation for the future condition of the patient so why he will additionally pay for medical services. The term "iatrogenia" was first introduced by the German psychiatrist Oswald Bumke in his work "The Doctor as the cause of mental disorders" in 1925.

Conclusions. The frequency of development of side reactions and their severity depends on the individual characteristics of the patient, his sex and age, the severity of the underlying and concomitant diseases, the pharmacodynamic and pharmacokinetic characteristics of the drug, its dose, duration of application, route of administration, and drug interactions. Systematization of side effects of drugs is an important step for diagnosing and preventing many diseases caused by side effects of these drugs.

USING ELECTRON PARAMAGNETIC RESONANCE IN MODERN METHODS OF DIAGNOSTIC STUDIES IN MEDICINE AND PHARMACY

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Introduction. To date, there are a large number of diagnostics and studies, one of which is the method of electron-paramagnetic resonance (EPR). This method allows us to know the concentration of substances in a living organism, while some plants and humans.

Aim. Research of EPR work. Use of the method in biology and medicine.

Materials and methods. EPR is a physical phenomenon that consists in the selective absorption of electromagnetic waves by a paramagnetic substance placed in an external magnetic field. The method got this name due to the fact that it is observed in paramagnetics (paramagnetic) and the absorption of radiation occurs at the resonant frequency (resonance). By changing the magnitude of the magnetic field, the Soviet researcher Yevgeny Konstantinovich Zavoysky reached the resonance condition and transferred the result to the tracing paper from the oscilloscope screen.

EPR is a very sensitive method because the natural background of free radicals is meager. Unlike nuclear magnetic resonance (NMR), EPR requires less power because the mass of an electron is less than that of a proton.

EPR is observed in substances containing paramagnetic particles: molecules, some gases (O₂, NO), atoms, ions, radicals with a magnetic moment induced in electrons. Ions of 3d metals of the iron group are known as the main source of free radicals that cause the destruction of cells of the nervous system.

Results and discussion. EPR is used to study bioorganic nanoobjects, such as metalloproteins and is very promising for the development of nanomedicines. Also, this method is the best for pharmaceuticals, namely the creation of drugs. Substances of nanosized particles can introduce a human cell into the structure, which can be dangerous to human health.

One of the first biological experiments was conducted by the American and Russian scientists Barry Komer and Lev Alexandrovich Blumenfeld. They conducted a study that would