EVALUATION OF THE EFFECT OF ATROPINE SULFATE IN COMPARISON WITH DICLOFENAC SODIUM ON THE EXUDATIVE STAGE OF INFLAMMATION

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INTRODUCTION

Modern studies devoted to increasing the safety of NYaQV are based on the study of the pathogenesis of inflammation and the mechanisms of action of NYaQV. The anti-inflammatory effect associated with the reduction of prostaglandin production as a result of cyclooxygenase (TsOG) enzyme blockade is associated with the gastrotoxic effect of modern NSAID. It blocks not only TsOG-2, but also TsOG-1, which is necessary for the normal functioning of the gastric mucosa. The most up-to-date NYaQV selectively acting on TsOG-2 is not free from gastrotoxic effect (E.S. Tsvetkova, 2004; E.L. Nasonov, 2005).

It is worth noting that TsOG-2 has been detected in the stomach harboring Helicobacter pylori, and TsOG-2 inhibitors can slow wound healing. Drugs belonging to this group did not give the expected result due to other types of complications - myocardial infarction, stroke (A. Romanovsky et al., 2005). All of the above prove that the search for drugs with high activity and low toxicity is one of the urgent problems of modern pharmacology.

In recent years, new anti-inflammatory drugs such as fensulkal, fentriazolin, dichlotazol, benzketazone, konvaren have been developed and put into practice by the staff of the department of pharmacology of TTA (D.N. Karshiev, 2000; U.B. Zakirov, 2005; Sh.A. Yuldasheva , 2006). It is known that in order to increase the effectiveness of pharmacotherapy, it is necessary not only to create new drugs, but also to use them in the treatment of various pathological conditions, taking into account their pharmacodynamic and pharmacokinetic properties. In this case, it is necessary to know all their pharmacological effects. In this regard, drugs belonging to the group of M-cholinoblockers attracted our attention. However, according to the data of the literature, the group of pharmacological agents is not free from serious side effects. Therefore, scientific research is being conducted to reduce their side effects in medical practice.

Agents that block M-cholinoreceptors (M-cholinoblockers) Substances of this group mainly block peripheral M-cholinoreceptors (that is, cholinergic receptors located in the postsynaptic membranes of neuroeffector synapses at the end of parasympathetic nerves) and prevent AX from connecting with them. Drugs of this group do not affect the synthesis, breakdown, excretion of AX. M-cholinoblockers eliminate or sharply reduce the changes that occur when stimulating the parasympathetic nervous system, and eliminate the effect of M-cholinomimetics, anticholinesterase agents, acetylcholine and similar compounds.

Since the most typical representative of M-cholinoblockers and the most studied is atropine, this group of drugs is also called the atropine group. Atropine is an alkaloid-Atropa Belladonnae, Hyocyamus niger, Datura stramonium (miningdevona, bangidevona plants). Chemically, it is a complex ester of tropine and D,L-tropic acid. Atropine has two stereoisomers: dextrorotatory and levorotatory. During plant processing, these active stereoisomers are converted into racemic form (less active atropine), which is used in medicine. Atropine is also obtained synthetically. Atropine selectively blocks only M-cholinergic receptors. Atropine binds to it and prevents AX from acting on it, and therefore excitatory impulses do not pass through the neuroeffector synapses at the parasympathetic nerve endings. As a result, changes observed in parasympathetic nerve paralysis appear.

Objective of the study: to evaluate the effect of atropine sulfate on the exudative stage of inflammation in comparison with diclofenac sodium.

Materials and Methods.

To perform the experimental part of our scientific work, we used 120 purebred male rats in normal vivarium conditions.

Test drugs were administered in the following doses;

Atropine sulfate 0.5 mg/kg, 1 mg/kg intragastrically through a metal probe, and diclofenac sodium (1 mg/kg), a currently widely used NYaKV drug, was used as a comparator. The anti-inflammatory effect of the drug was evaluated by the differences in the paws of the rats in the control and experimental groups.

It was found that atropine sulfate has stronger anti-inflammatory activity when it is administered by the same method. In order to determine the anti-inflammatory activity of an orally administered drug, a variety of phlogogenic agents commonly used to induce arthritis were challenged at the following concentrations; dextran (6%), formalin (2%) solutions were injected under the paw skin of the hind paw of animals in a volume of 0.1ml/kg. Test preparations were administered to animals 1 hour before administration of phlogogenic agents. The size of the paw was measured using a water plethysmometer (oncometric method) before the introduction of the phlogagen agent and during a specified hour, and the results were recorded.

When determining the anti-inflammatory activity of the drug (atropine sulfate), the ratio of the size of the paw before the experiment to the size of the paw during the experiment was determined using mathematical calculations. Rheumatoid joint injury is based on the inflammatory process. To eliminate it, anti-inflammatory drugs are used. Taking this situation into account, an adjuvant arthritis model in experimental animals was called.

"Cotton pellet" method recommended by Meijer et al. was used to study the effect of drugs on the proliferative phase of inflammation. The results of the experiment conducted using the "Cotton pellet" method determined the anti-inflammatory activity of the investigated drug.

A number of researchers choose formalin as a phlogogenic agent in most cases, because the inflammatory process induced by formalin is similar to the inflammatory process in humans. Therefore, the formalin tumor model is used to study the anti-inflammatory activity of drugs.

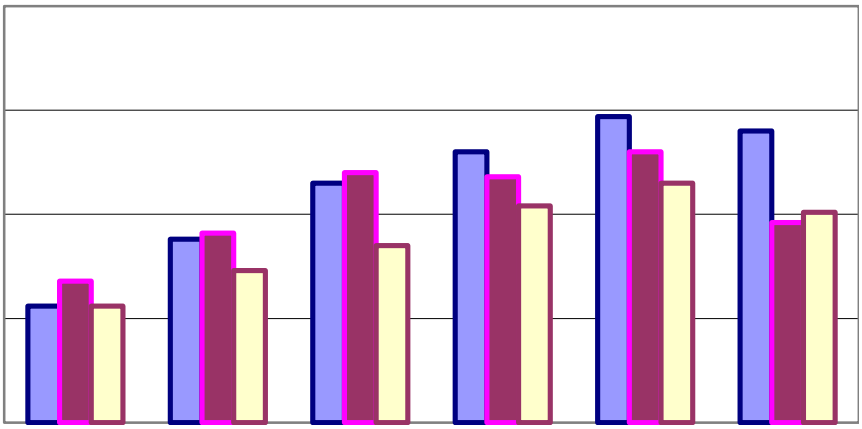
Results and its discussion.

The phlogogenic effect of formalin is distinguished by the duration of its action and the release of biogenic amines and free amino acids at the site of introduction.

The obtained results show that both tested drugs have a significant anti-inflammatory effect, and this effect reduced the intensity of the aseptic inflammatory process with formalin to different degrees.

When comparing atropine sulfate with the traditional anti-inflammatory drug - diclofenac in formalin induced inflammation in experimental animals, it was found that both studied drugs have significant anti-inflammatory activity. During the observation period, it was observed that the paw size of rats increased in the first 4 hours (Fig. 1).

After administration of diclofenac, the paw size of rats increased by 1.80 times compared to the initial results after 4 hours, while atropine sulfate increased this indicator by 1.48 times. Diclofenac showed 1.44%, atropine sulfate - 30.6% less than the control group. However, 24 hours after the experiments, the paw size decreased in the animals of the control groups



Atropine sulfate (10 mg/kg) increased the mass of granule tissue after drying (49.0±5.3, P<0.05) compared to the control group (69.0±5.3; R<0.05) 29% decreased to

Diclofenac decreased the increase in dry granule mass by 25.8% (51.2±6.5; P<0.05), which means that its effect was more pronounced than that of atropine sulfate.

Although diclofenac inhibited exudation intensity less than atropine sulfate, animals in the atropine sulfate-treated group had higher results than the control group. Atropine sulfate and Diclofenac decreased the weight of both wet and dry cotton balls and simultaneously reduced the intensity of exudative conditions. Under the influence of atropine sulfate, the increase in the mass of granulomatous tissue after drying decreased by 44.6% compared to the control group.

The conclusion.

Thus, as a result of the studies conducted, the antiproliferative effect of atropine sulfate was demonstrated by a statistically significant reduction in the mass of wet and dried implants. It had a significant anti-inflammatory effect and attenuated the proliferative and exudative stages of inflammation, showing superiority over diclofenac in these results. Under the influence of diclofenac, the increase in the mass of granulomatous tissue after drying was reduced by 60.5% compared to the control group, that is, its effect was more pronounced than that of atropine sulfate.

The results of the conducted studies showed that the drug atropine sulfate, which we used, showed its effect in all phases of inflammation. In the exudative and proliferative stages of inflammation, diclofenac had an effective effect, and in the alterative phase, diclofenac was found to be ineffective in experimental practices.

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