THE EFFECT OF DIMEDROL* ON THE DEVELOPMENT OF SHWARTZMAN'S PHENOMENON

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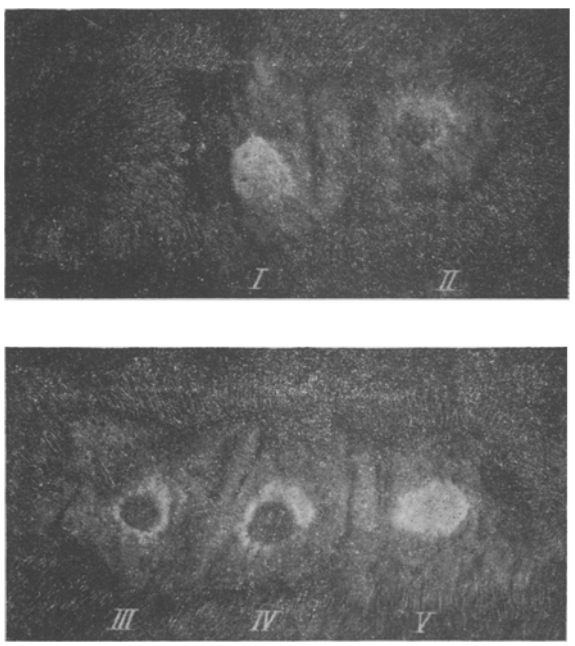
Dimedrol – one of the best domestic histamine preparations – was found to be quite effective a remedy in the treatment of allergic diseases of various origins. However, there are no exact indications for its application, which is probably due to scarcity of experimental data on the mechanism of its action. For this reason we undertook the problem of studying the effect of dimedrol on the development of Shwartzman's phenomenon.



Development of Shwartzman's phenomenon in rabbits by experimental administration of dimedrol. From left to right: skin area I) negative Shwartzman's phenomenon (no skin changes); skin areas II) positive Shwartzman's phenomenon bluish hemorrhagic spots); skin area III) positive Shwartzman's phenomenon; skin area IV) positive Shwartzman's phenomenon; skin area V) no skin changes.

EXPERIMENTAL METHOD

Experiments were carried out on rabbits. The phenomenon was produced by the method described by Shwartzman. Dimedrol was administered in 1 ml doses of a solution of 1 : 10,000 (solutions of concentration greater than 1 : 1,000 were found to be toxic and produced skin necrosis when injected intracutaneously). In control experiments pure dimedrol or physiological solution was used. In other experiments ascorbic acid (10-50 mg) was used; according to the literature, its intracutaneous injection averts the development of Shwartzman's phenomenon [2].

Five skin areas were prepared on the lateral surface of the body of rabbits weighing not less than 1,500 g with the use of a depilator; into each one of these areas 0.5 ml of a filtrate of B. coli was injected.

In the first variant of the experiments dimedrol was injected intracutaneously simultaneously with the preparatory injection.

Into skin area I were injected a filtrate of B. coli and dimedrol; into area II – a filtrate of B. coli and physiological solution; into area III – a filtrate of B. coli only; into area IV – a filtrate of B. coli and 10 mg of ascorbic acid (2 hours before the resolving injection); into area V – dimedrol only. Twenty-four hours later the resolving injection was given (1 ml of filtrate of B. coli intravenously).

In the second variant of the experiments dimedrol was injected into those skin areas into which previously

*Diphenhydramine hydrochloride.

a filtrate of B. coli and the resolving injection were simultaneously introduced, i.e., 24 hours after the preparatory injection. The order of the intracutaneous injections of preparations was the same as in the preceding experiment. The dose of ascorbic acid was 30 mg.

In the third variant of the experiments dimedrol was injected intracutaneously one hour after the resolving injection, i.e., 25 hours after the preparatory injection. The order of the intracutaneous injections of preparations was the same as in the preceding experiment. The dose of ascorbic acid was 50 mg.

In all of the three variants of the experiments the results were identical and consisted of the following (see figure): skin area I – negative reaction (no skin changes); area II – positive reaction (bluish hemorrhagic spots); area III – positive reaction; area IV – positive reaction; area V – negative reaction (no skin change).

Thus in all three variants of the experiments dimedrol averted the development of Shwartzman's phenomenon.

Shwartzman [4] demonstrated that following appropriate preparation the phenomenon can be observed in the viscera as well: in the lungs and kidneys. This fact was confirmed by Gratsiia.

We set up a series of experiments with the purpose of determining whether or not Shwartzman's phenomenon could be averted in the viscera as well by administration of dimedrol. For this purpose 8 mg of dimedrol per 1 kg weight of rabbit was administered intravenously and intramuscularly simultaneously with the preparatory injection and also on the second and third days of the experiment.

In not one of the variants of the experiments did we observe that the development of Shwartzman's phenomenon was averted in the viscera.

Thus dimedrol averts the development of Shwartzman's phenomenon in rabbits upon its introduction in skin areas prepared with filtrate simultaneously with the preparatory injection, simultaneously with the resolving intravenous injection of the filtrate, and one hour after the resolving injection of the filtrate.

At the same time intravenous and intramuscular administration of dimedrol even in massive doses does not avert the development of Shwartzman's phenomenon.

When ascorbic acid was introduced into the preparatory areas it too did not avert the development of Shwartzman's phenomenon in a single variant of our experiments.

SUMMARY

It was established that dimedrol averted the development of Shwartzman's phenomenon in rabbits when administered intracutaneously as follows: 1) simultaneously with the preparatory dose of filtrate of B. coli, 2) simultaneously with the resolving dose of filtrate of B. coli and 3) one hour after the administration of the resolving dose of filtrate of B. coli. Dimedrol did not avert the phenomenon in viscera.

LITERATURE CITED

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