

SYMPATHETIC-ADRENAL COMPLEX IN MAN DURING THE PROLONGED (MULTIHOURLY) ACTION OF AMINAZINE

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It has now been shown that one of the mechanisms of the action of aminazine is inhibition of the sympathicotropic effect of adrenalin, due mainly to the blocking influence of this neuroleptic on the adrenergic structures of the reticular formation.

However, the literature data are limited only to a description of the sympathetic-adrenal changes observed during the first hours after the injection of aminazine [2, 3, 5, 7].

In this work we attempted to determine how such changes will be expressed after a substantial (multihour) period of time after administration of this substance.

INVESTIGATION PROCEDURE

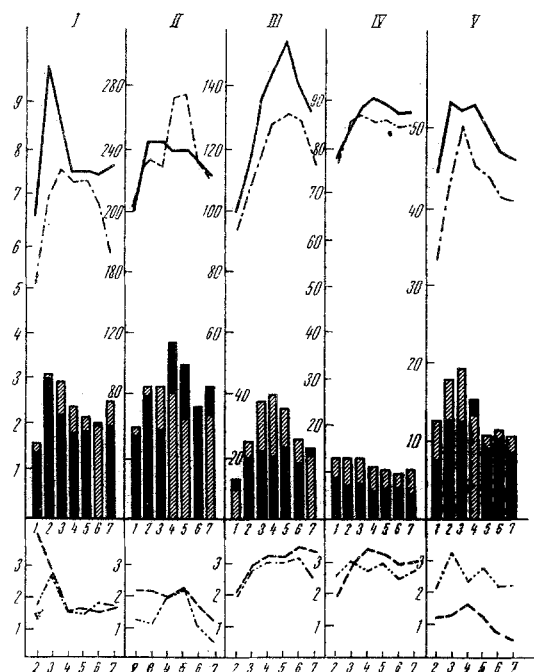
The investigations were conducted on 27 patients with involutional psychosis, who were distributed in two groups, which did not differ in any clinical characteristics.

The patients of the first group (8) received aminazine (0.05-0.15 g) at 10:00 P.M. on the day before the investigation, while four others received it at 4:00 P.M. and 10:00 P.M. (in doses of 0.05-0.1 g each time). Three patients received aminazine for 7 to 15 days before the beginning of the investigation, five from one to three months, and four for longer periods. The patients received the preparation per os in the form of tablets, more rarely in solution. The patients that made up the second group (15) were not subjected to any treatment.

The sugar level in the blood, number of leukocytes and thrombocytes, pulse and blood pressure were determined after subcutaneous injection of 1 ml of a 0.1% adrenalin solution in the region of the shoulder to characterize the sympathicotropic action of adrenalin. The investigations were usually conducted at 10:00 A.M. In four patients, the reactions to the administration of adrenalin were studied a single time, and in 23 repeatedly for 10 to 15 days. The determination of the indices indicated above were conducted before the injection of adrenalin, and after it, at 20 min intervals for 2 h. In 23 patients, in addition to the unconditioned reactions to the injection of adrenalin, we also studied the conditioned reflex vegetative changes arising in the process of repeated injections of the preparation. For this purpose we studied the vegetative reactions that developed when one of the regular injections of adrenalin, administered under standard conditions, was replaced by physiologic solution. In most of the patients of both groups, the unconditioned and reflex reactions were investigated repeatedly.

RESULTS OF THE INVESTIGATION

Our investigations showed that in the patients of both groups, an increase in the level of leukocytes, thrombocytes, and blood sugar, a quickening of the pulse, and an increase in the blood pressure are observed during a period of two hours after the injection of adrenalin. During the first 20-40 min after the administration of adrenalin, it was noted that in patients that had received aminazine, the number of leukocytes and thrombocytes increased to a



Characteristics of the vegetative changes after various periods of time after the administration of adrenalin to patients that did not receive (—; - - -; ▨) and that received (— - - - -; - · - · - ·; ■) aminazine. Top curves—level of vegetative indices studied; columns—root-mean-square deviation (σ); bottom curves—criterion of reliability (t) of the changes in comparison with the initial level. Upper half of the figure: along Y-axis—arithmetic mean of the level of leukocytes (I) in thousands, thrombocytes (II) in thousands, blood sugar (III) in %, pulse (IV) in absolute numbers, blood pressure (V) in absolute numbers; along X-axis—time of investigation (1) before injection of adrenalin; 2) after 20 min; 3) after 40 min; 4) after 60 min; 5) after 80 min; 6) after 100 min; 7) 120 min after injection of adrenalin). Lower half of figure: along Y-axis—value of reliability criterion (t); along X-axis—the same as in the top half.

lesser degree, while the pulse was speeded up to a greater degree than in the patients of the control group. Moreover, in the patients that received aminazine, the blood pressure increased considerably more distinctly (during the two hour period after the injection of adrenalin); hyperglycemic changes (with rare exceptions) were almost equally pronounced in the patients of both groups (see figure). It was noted that the administration of comparatively small doses of aminazine (0.1 g and less) produces an intensification of certain vegetative changes that arise in response to the injection of adrenalin, while higher doses of the neuroleptic used (above 0.1 g) produced a substantial weakening of such conditions. In an investigation of the conditioned vegetative changes, it was found that in the patients of both groups they are more distinctly manifested in an increase in the number of thrombocytes and leukocytes than in the increase in the blood sugar level, blood pressure, and pulse rate.

Noteworthy is the fact that conditioned adrenalin thrombocytosis and leukocytosis appear especially often (59.1%) after the administration of small doses of aminazine (of the order of 0.075 g). The stimulating influence of small amounts of aminazine (0.1 g and less) on certain subcortical and cortical components of the sympathico-adrenal complex noted agrees with the available literature data [1, 2, 4, 6, 8] on the increased excitability of the activating system and the improvement of various conditioned reflexes under the influence of small doses of neuroleptic. We should emphasize only that in our investigations, a similar stimulating effect was noted even 12 h after the introduction of aminazine. From the modern concepts of the reticular formation, the question follows of whether the inhibition of the vegetative reactions observed under the influence of aminazine can be related to the possibility of prolonged blockage of the subcortical adrenergic structures in these cases. As has already been stated, we were unable to detect an analogous blocking effect with respect to the cortical adrenoactive elements in such a distinct form, since the conditioned reflex components of the sympathetic-adrenal complex studied emerged graphically enough in the overwhelming majority of the patients subjected to aminazine therapy (even after the administration of aminazine in a dose higher than 0.1 g).

The facts presented in the work give evidence of a substantial duration (for many hours) of the effects of aminazine on the cortical and subcortical adrenergic structures and the dependence of this effect on the dose of the substance used.

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All abbreviations of periodicals in the above bibliography are letter-by-letter transliterations of the abbreviations as given in the original Russian journal. *Some or all of this periodical literature may well be available in English translation.* A complete list of the cover-to-cover English translations appears at the back of this issue.