So far as the investigations of serum enzyme activity are concerned (Table 2) short-term crushing of the soft tissues preceded by administration of adrenalin to the rats led to a marked increase in activity of DNase, acid phosphatase, and aryl sulfatase; the degree of elevation of activity of all the enzymes was similar (activity was more than doubled compared with the control). With an increase in the period of crushing to 30 min activity of the acid DNase and phosphatase in the blood fell considerably (to 121 and 166% of the intact control, respectively), whereas aryl sulfatase activity remained at its previous level. With a further increase in the period of crushing of the soft tissues the dynamics of changes in the activity of these enzymes in the blood differed. DNase activity reached almost the control level after 1 and 1.5 h of crushing (113% of the control), but rose sharply again after crushing for 2 h (to 212%) and remained close to this level until the end of the investigation, when it fell again to 133%. Activity of aryl sulfatases A and B fell to 146% of the intact control during crushing of the tissues for 1.5 to 3 h, and then rose again after 3.5 h, to reach a maximum (258%) at the end of the experiment. Blood acid phosphatase activity remained high throughout the experiment and reached its highest peak 3.5-4 h after application of the forceps (258% of the control). Unlike the other two enzymes, blood acid RNase activity of rats traumatized after injection of adrenalin not only was not increased but, on the contrary, it was reduced by 21% below the control level after short-term crushing and remained somewhat reduced (by 10-15%) throughout the experiment, but returned to the control level at the end of the investigation.

The experiments thus showed that parenteral injection of adrenalin before infliction of trauma on animals does not cause any qualitative changes in the response of the liver lysosomes to trauma. This response was manifested as quantitative changes — activation of the lysosomal hydrolases studied and disturbance of stability with release of the enzymes into the cytoplasm of the hepatocytes, and from them into the systemic circulation.

LITERATURE CITED

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EFFECT OF ELECTRICAL STIMULATION OF THE DENTATE
NUCLEUS ON CORTICAL EPILEPTIC FOCI

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Suppression of neuropathological syndromes on activation of corresponding brain structures is highly relevant to the understanding of activity both of pathological systems, which

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Fig. 1. Effect of ES of DN on a relatively weak epileptic focus in anterior sigmoid gyrus, focus of induced seizure activity in the hemisphere contralateral to the stimulated nucleus, and on a "mirror" epileptic focus. a) 12 min after application of penicillin solution (16,000 Units/ml) to zone 1, after appearance of discharges in zones 1, 2, and 3 the penicillin was removed; b) decrease in amplitude of conducted discharges in zone 2 during ES of DN 6 min after end of penicillin application to zone 1 (first session of ES); c) suppression of epileptic discharges in zones 1, 2, and 3 during repeated ES of DN 5 min after beginning of ES of DN (third session of ES); d) 50 sec after c — absence of epileptic activity; e) recovery of epileptic activity in foci 30 sec after d; f) complete suppression of epileptic activity after next, fifth, ES of DN, recording made 1 min after end of ES; g) 7 min after electrical coagulation of DN (9 min after end of last ES). 1) Anterior sigmoid gyrus, 2) posterior sigmoid gyrus, 3) "mirror" focus. Parameters of ES: 300 Hz, 0.25 msec, 3.5 V. Time marker 1 sec, calibration 500 μV.

Fig. 2. Effect of ES of DN on a powerful epileptic focus in anterior sigmoid gyrus, focus of induced seizure activity in hemisphere contralateral relative to stimulated DN, and on a "mirror" epileptic focus. a) 9 min after application of penicillin solution (40,000 Units/ml) to zone 1, after appearance of discharges in zones 1, 2, and 3 penicillin was removed; b) increase in frequency of discharge generation in zones 1, 2, and 3 and decrease in discharge amplitude in zone 2 during ES (first session of ES, 5 min after end of penicillin application); c) reduction in amplitude and frequency of discharges in zones 1 and 3 and suppression in zone 2 during repeated ES of DN (fifth session of ES, 16 min after end of penicillin application); d) suppression of epileptic discharges in zones 1, 2, and 3 during ES of DN (seventh session of ES, 21 min after end of penicillin application); e) complete suppression of discharges in all zones after ninth session of ES of DN, 25 min after end of penicillin application; f) 6 min after electrical coagulation of DN. Remainder of legend as to Fig. 1.

lie at the basis of neuropathological syndromes, and of physiological antisystems responsible for the effects of suppression of these syndromes and leading to a state of relative functional homeostasis [1]. According to some workers [12, 13] electrical stimulation (ES) of the dentate nucleus in the cerebellum inhibits epileptic activity in the cerebral cortex. Meanwhile a twofold influence — both inhibitory and activating — of the dentate nucleus on epileptic activity has been described during ES [6].

In the investigation described below effects of ES of the dentate nucleus (DN) of the cerebellum on ipsilateral and contralateral foci of epileptic activity in the cerebral cortex were studied.