

INTRODUCTION

THE JOINT POLISH-SOVIET SYMPOSIA ON BRAIN ISCHEMIA
AND EDEMA

The 3rd Joint Symposium on Brain Ischemia and Edema was held in Warsaw on May 21—26, 1979. The members of this Symposium, as of the previous ones, were participants of the investigations which are jointly carried out by several laboratories of the Medical Research Center, Polish Academy of Sciences (Warsaw) and I. Beritashvili Institute of Physiology, Georgian Academy of Sciences (Tbilisi). The researchers meet together at the symposia in three years intervals to discuss jointly the results of their works carried out during the previous years. The 1st and the 2nd Joint Symposia were held in Tbilisi in 1973 and 1976. The papers presented at the symposia were published in „Neuropatologia Polska” (v. 12, No. 4, 1974 and v. 17, No. 2 and 3, 1979).

The joint research of the two institutions in the field of brain ischemia and edema was started as far as in 1971. The research is complex and multidisciplinary, i.e. the investigations are carried out by specialists in various biomedical fields — neuropathology, physiology and pathology of the cerebral circulation, neurochemistry, neuromorphology, histochemistry, neurophysiology etc. To overcome the difficulties in such a cooperation the systems' analysis of the problems under investigation has been used from the middle of the 1970s (see *Neuropat. Pol.* v. 17, No. 3, 391—396, 1979). It helped considerably to make the research planning more efficient and, in particular, to determine where the interests of individual laboratories converge and where the coordination of the studies must be especially thorough. Such approach was necessary in the research in which a great variety of methods is to be used for a better understanding of the fundamental processes of brain ischemia and edema development.

In the course of these investigations some new experimental models have been developed. First of them was the model of brain ischemia with controlled severity and duration (the so-called „Geor-

gian model"). Ischemia in cerebral hemispheres is produced by the reversible occlusion of both carotids and restriction of collateral blood supply from the site of vertebral arteries by a regulated decrease of the systemic arterial pressure (*Neuropat. Pol.* v. 11, 249—262, 1963). This model was successfully used in many studies carried out in both institutions and provided a perfect possibility to compare the results obtained by different methods. Recently a new experimental model of brain edema was developed in which the edema is produced by repeated venous blood stagnation in the chest-head preparation of rabbits. Under these conditions brain edema develops regularly and in the course of its development it is possible to investigate the changes in mechanical properties of the brain, the tendency for changes in the cerebral blood volume, as well as the tendencies for water retention in the brain tissue and its dehydration.

The other model consists in both unilateral and bilateral carotid artery ligation in the Mongolian gerbils. The peculiar inborn malformation of the larger brain arteries in those animals offers the possibility to compare both morphological and metabolic changes occurring in ischemic and normal, control brain hemisphere. For comparative reasons some of the studies were carried out in conditions of hypoxic hypoxia.

The present issue of „*Neuropatologia Polska*” contains some of the papers presented at the Third Joint Symposium of Brain Ischemia and Edema by the participants of studies carried out in Warsaw and Tbilisi.

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