41) Influence of time phase of antihypertensive treatment on cerebral ischemia induced by BLCL in SHRSR. Satoru Suzuki, Yasuo Katayama, Jun Shimizu, Hajime Memezawa, Rinnosuke Obo, Satoshi Iida, Fumihiko Kashiwagi, Shigeru Sugimoto, and Akiro Terashi. Second Department of Internal Medicine, Nippon Medical School, 3-5-5 Iidabashi Chiyoda-ku Tokyo 102.

The influence of time phase of antihypertensive treatment and its ameliorating effect of the long-term treatment on experimental cerebral ischemia were discussed in this report.

Materials and Methods

The male stroke-resistant spontaneously hypertensive rats (SHRSR) were used. Nicardipine hydrochloride which is one of the Ca^{2+} antagonists was administered to two SHRSR groups, one group was administered for 3 weeks (short-term T-SHR) and the other for 8-10 weeks (long-term T-SHR). On these two groups, the degree of cerebral ischemia induced by BLCL (bilateral common carotid artery ligation) was investigated with each control group (U-SHR). The brain metabolites (ATP, lactate, c-AMP), brain water content were analysed 4hr after BLCL and the histopathological changes were observed by scanning electron microscopy (SEM) 3hr after BLCL.

Results

ATP level in the short-term T-SHR group was higher than that of U-SHR group after BLCL, however there was no significant difference in lactate and c-AMP levels between these two groups. The brain water content in the occipital region after BLCL in the short-term T-SHR group was significantly lower than that of U-SHR, but no difference in the frontal region between the two groups. In the long-term T-SHR, ATP and c-AMP levels were significantly higher than that of U-SHR, and the lactate level was significantly lower than in U-SHR. Furthermore the brain water content after BLCL in the long-term T-SHR was significantly lower than that of U-SHR in the both frontal and occipital portions. There was a significant amelioration of the brain metabolism and brain edema after BLCL in the long-term T-SHR than in short-term T-SHR. From the observation of SEM in the brain vessels after BLCL, the short-term and long-term T-SHR showed a lesser propagation of microvilli on the endothelial surface than each U-SHR group, and the vasoconstriction was observed in these U-SHR groups. The marginal folds were shown to remain in the both short-term and long-term T-SHR groups after BLCL. However, in this histopathological study, the vascular endothelial ischemic changes of the brain vessels were more less in the long-term T-SHR than in short-term T-SHR.

Conclusion

These results indicated that the long-term antihypertensive treatment significantly contributed to the ameliorating effect on ischemic insult.