35) PASSIVE AVOIDANCE IN SHR. Katsumi Ikeda, Akihiko Fujimoto*, Yasuo Nara, Ryoichi Horie, Hiroshi Ishino*, Yukio Yamori. Depts. of Pathology and Psychiatry, Shimane Medical University, Izumo 693.

INTRODUCTION

In the previous report, the swelling of glia cell in SHRSP at the advanced stage of hypertension was reported, and this histological change suggests the possibility of abnormal behavior in SHRSP at the advanced stage of hypertension. Our purpose in this examination is to observe the correlation between behavior and hypertension or its complications such as stroke, and to find behavioral difference in SHRSR, SHRSP and WKY.

MATERIALS AND METHODS

Eighteen of 5-month-old SHRSR, SHRSP and WKY, 12 of 17-month-old SHRSR and WKY were examined, and 6 of age-matched SHRSP with a mild head enlargement and hyperresponsiveness to picking-up were selected as a group of SHRSP with symptom. After examination, 6 of SHRSP with symptom and 5 of SHRSP without symptom were sacrificed immediately, and the incidence of cerebrovascular diseases were confirmed histologically.

Step through-Passive Avoidance System (PVA-20, SGS-200 Muromachi Kikai) was used for this trial. The latent times before moving from a light box into a dark box before and after the experience of one-time foot shock were measured as a latency. The latency before a foot shock was measured first, and then the latency after an electrical foot shock was measured at regular intervals. All data were analyzed by Mann-Whitney U test.

RESULTS

Mean latencies at 1 day after foot shock were significantly extended compared to the latencies before foot shock in SHRSR, SHRSR and WKY at the age of 5 months, but SHRSP with symptom showed no significant extension. Infarctions were observed 6 in 6 of SHRSP with symptom, and small hemorrhage with infarction was found in one of them. Mean latencies after foot shock measured at regular intervals were first extended and then gradually reduced, and the rates of reduction of the mean latency were SHRSP>SHRSR>WKY. WKY maintained a high mean latency for a long time. Mean latency at 1 day after foot shock in 17-month-old SHRSR was not significantly extended compared to the latency before foot shock, but that in the age-matched WKY was significant extended.

DISCUSSION

Because of our observation that latencies were prolonged by only one-time experience of foot shock in SHRSR, SHRSP and WKY, passive avoidance test was confirmed to be useful for a behavior examination for testing learning ability or memory in rats. These extensions were not constant among 3 strains examined. In general, it has been thought that strain-dependent difference causes such difference of extension. However, since the latency extension after foot shock was not observed in SHRSP with stroke lesions in the brain, the damage of the brain except for strain-dependent difference may affect the latency after foot shock.

Seventeen-month-old SHRSR did not showed any latency extension after foot shock, although the age-matched WKY showed a prolonged latency after foot shock. This finding may suggest a possible difference in the rate of aging between SHR and WKY.