33) Changes in Blood Pressure and the Retinal Arterioles of SHRSP Treated with Captopril for Long Duration. Kiyoharu Narita, Kiyoshi Yamagami, Hiroshi Yoshimoto and Shuichi Matsuyama. Department of Ophthalmology, Hirosaki University School of Medicine, Hirosaki-shi 036.

In the previous report (read at the Fourth International Symposium on Rats with Spontaneous Hypertension and Related Studies, Heidelberg, 1981), the effect of captopril on blood pressure, caliber of retinal vessels and electron microscopic changes in the vascular walls were studied in SHRSP. On the observation, up to 40 weeks of age orally given captopril (30 mg/kg/day; in drinking water) reduced blood pressure of SHRSP without any rebound, and dilated the caliber of the retinal arterioles. Electron microscopic observation of the retinal arterioles revealed severe sclerotic alterations in untreated group of SHRSP. However, the sclerotic changes were lacking or not marked in those of treated group of SHRSP.

This paper reports the results of further investigation on the effect of captopril in more elderly SHRSP.

Blood pressure and pathological changes of retinal arterioles were studied in an SHRSP in which captopril was administered for 56 weeks; from 16 weeks up to 72 weeks after birth. Blood pressure of three SHRSPs in which captopril was administered from 46 weeks up to 62 weeks after birth was also studied.

The results were as follows.

1) Blood pressure of the SHRSP, which received a continuous administration of captopril for 56 weeks from the age of 16 weeks, was well controlled up to 40 weeks of age. It, however, elevated after 44 weeks of age. The blood pressure at this period was 190 ± 20 mmHg, which was in accordance with the level of blood pressure at 16 weeks of age of untreated group of SHRSP. On electron microscopy, this rat showed marked thickening of basal lamina of capillary wall and slight degenerative changes in the arteriolar smooth muscle cells. Nerve fiber layer was normal except for presence of a few perivascular vacuoles.

2) In the group of three SHRSPs in which captopril administration was started at 46 weeks after birth, blood pressure did not reduce so significantly as in the group of SHRSP in which the administration was started in younger age. In this group, the blood pressure averaged 244 ± 21 mmHg before administration and 230 ± 20 mmHg after the administration of the drug.

From the results, it may be concluded that continuous long term oral administration of captopril reduces blood pressure of SHRSP and it prevents the progression of sclerotic alterations in the retinal arterioles, especially in the early stage of hypertension. However, captopril is of no effect in the cases having advanced sclerosis of the retinal arterioles.