49) PATHOLOGICAL CHANGES IN THE CHOROIDAL CAPILLARIES OF STROKE-PRONE SPONTANEOUSLY HYPERTENSIVE RATS(SHRSP) Shigeki Takahashi
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Introduction: The author has previously reported histological findings of the retina and the retinal vessels in symposia on SHR. It has been reported that histological changes in the choroidal vessels of patients with hypertension and hypertensive retinopathy differed from those found in the retinal vessels. In this connection the author examined the histopathology of the choroidal capillaries of SHRSP.

Material and Methods: Nine SHRSP were used. Three animals had both cerebral hemorrhage and cerebromalacia, two had cerebromalacia and four had no cerebral change. The ages of these animals ranged between 129 and 375 days. After the fundi of the eyes were examined by ophthalmoscope, the animals were killed and the eyes were enucleated. The eyes were cut in small pieces and dehydrated in graded series of ethyl alcohol and embedded in Epon. The Epon-embedded tissues were sliced with an ultramicrotome. The ultrathin slices were stained with uranyl acetate and lead citrate and were examined by electron microscope.

Results: In the animals with both cerebral hemorrhage and cerebromalacia the histological changes were narrowing and caliber irregularity of the retinal arterioles and dilatation of the retinal venules. Retinal opacity was also observed. In the animals with cerebromalacia pathological changes, i.e., narrowing, caliber irregularity and tortuosity of the retinal arterioles were the same as the findings in the animals with both cerebral hemorrhage and cerebromalacia (one of the two animals). Retinal opacity was also observed. In the animals with no cerebral change, narrowing and caliber irregularity of the retinal arterioles were observed but there was no retinal opacity. In the choroidal capillaries the endothelial cells located next to Bruch's membrane were very thin and many fenestrations were recognized. In SHRSP the thickness of the basement membrane was remarkably increased. The thickness of the basement membrane was remarkably increased. The thickness of the basement membrane of the choroidal capillaries which form choriocapillaries was also increased and accumulation of serous substance and abnormal fibrous material was obtained. These changes were seen in the animals without cerebral change.

Discussions and Conclusions: In the animals with cerebral hemorrhage and cerebromalacia, remarkable changes were observed on the hyaloid membrane and the intercapillary space of the choroid coat when compared with those in the retina. Admitting structural differences between the retinal and choroidal vessels, these findings suggest that the choroidal capillaries are more likely to be affected by the elevation of blood pressure than the retinal capillaries. The author studied histological changes in the choroidal capillaries of nine stroke prone spontaneously hypertensive rats (SHRSP), some of which suffered from cerebral hemorrhage and cerebromalacia. The following results were obtained.

1. Retinal opacity, narrowing and caliber irregularity of the retinal arterioles and dilatation of the venules were found in animals with both cerebral hemorrhage and cerebromalacia.

2. Histopathological changes in the choroidal capillaries of animals with cerebral hemorrhage and cerebromalacia were thickening of the hyaloid membrane (Bruch's membrane), accumulation of serous substance and abnormal fibrous material in the intercapillary space.