19) ON THE CHOROIDAL VESSELS OF SPONTANEOUSLY HYPERTENSIVE RATS

2. Pathological changes of some experimental hypertensive rats.

Shigeki Takahashi. Department of Ophthalmology, Yamagata University School of Medicine, Yamagata-shi 990-23 Japan.

The author has previously reported in this meeting on the histological findings of the retinal and choroidal vessels of spontaneously hypertensive rats. The author further investigated histologically changes in the choroidal vessels of stroke prone spontaneously hypertensive rats (SHRSP), renal ; hypertensive rats (RHR) and DOCA hypertensive rats (DHR) which had recent retinal hemorrhage.

Methods: The experimental animals used were 9 SHRSP's, 5 RHR's, and 5 DHR's. The age ranged from 3 to 5 months in the 9 SHRSP's and from 2 to 3 months in the 5 RHR's. In all these animals hypertension developed within the past 3 months. The 5 DHR's, 2-3 months of age, became hypertensive within 2 to 3 months of the DOCA treatment. The fundi were examined ophthalmoscopically. In order to observe the histological changes of the ocular tissues the animals were killed and the eyeballs were enucleated. The tissues then were dehydrated in graded series of ethyl alcohol and were embedded in Epon. The tissues were examined with an electron microscope.

Results: Retinal hemorrhage was found in 2 of the 9 SHRSP's, in 3 of the 5 RHR's and in 3 of the 5 DHR's. The choroidal capillaries of the SHRSP's, with retinal hemorrhage showed thickning of the basement membrane. The density of the network of capillaries forming the chorio-capillaries was decreased. Accumulation of abnormal amorphous substance was also observed in the network of the capillaries forming the chorio-capillaries. The pathological changes in the chorio-capillaries in the RHR's, and DHR's, were milder than those in the SHRSP's.

Discussion: SHRSP's, RHR's, and DHR's which had recent retinal hemorrhage showed pathological changes not only in the retinal vessels but also in the choroidal vessels. It was suggested from the above findings that pathological changes in the choroidal vessels, as well as those in the retinal vessels, are playing certain roles in the genesis of retinopathy.

Conclusion: The author studied histological changes in the chorio-capillaries of SHRSP's, RHR's, and DHR's which had recent retinal hemorrhage.

The following results were obtained:

1. Retinal hemorrhage was found in 2 of the 9 SHRSP's, in 3 of the 5 RHR's and in 3 of the 5 DHR's.
2. Histopathological findings of the chorio-capillaries of the SHRSP's with retinal hemorrhage include thickening of the basement membrane. The network of capillaries forming the chorio-capillaries was decreased in its density, and accumulation of abnormal amorphous substance was also observed in it.
3. The pathological changes in the choroidal capillaries in the RHR's and DHR's were milder than those in the SHRSP's.