28)The Relationship Between Retinal Vascular Abnormalities and Cerebral Pathology in SHRSP. Shigeki Takahashi,* Isao Hirata,* Hiroyuki Ito,** Kozo Okamoto.** *Department of Ophthalmology, Yamagata University school of Medicine Yamagata-shi 990-23. **Department of Pathology, Kinki University school of Medicine , Osaka-fu 589.

In a previous study we found an increased permeability of retinal vessels in SHRSP by means of fluorescein fundus angiography, and described from this finding the predictability of cerebral vascular pathology (Folia Ophthalmol. Jap. 29: 1950-58, 1978).

In an attempt to substantiate this predictability we made a histological study of the retinal vessels of SHRSP.

Methods:

Animals used for the study were nine SHRSP, 5 months to one year old. They included 3 rats with cerebral hemorrhage and cerebromalacia, 2 with only cerebromalacia and 4 with no known cerebral pathology.

Ferritin 0.5 ml was injected via the jugular vein as a tracer and the animals were sacrificed 15 min. later. The eyeballs were enucleated and cut in half. The retinal tissue was fixed and embedded in Epon 812. The retinal vessels were examined electron microscopically.

Results:

In the animals with cerebral hemorrhage and cerebromalacia vacuolation of the endothelium and degeneration of muscle layers were found in the retinal arterioles. Ferritin was observed in the vacuoles and the muscle layers. Vacuoles incorporating ferritin were seen also in the retinal venules and the capillaries.

In the animals with only cerebromalacia the histological change of note was remarkable degeneration of the muscle layers of the retinal arterioles. Otherwise the changes were of a degree similar to that seen in the rats with cerebral hemorrhage and cerebromalacia.

In the rats without cerebral vascular damage pathologic changes in the retinal vessels were slight compared with the other two groups.

Conclusion:

In the SHRSP with cerebral vascular damage vacuolation of the endothelial cells was found in the retinal vessels. Ferritin was seen in the vacuoles as well as in the extravascular space. These results seem to indicate an increased permeability of the retinal vessels of the SHRSP with cerebral vascular damage.