37) Ophthalmoscopic Assessment of Functional and Organic Changes of Retinal Arteries in Stroke-prone SHR (SHRSP). Masako Yoshida*, Ryoichi Horie, Yukio Yamori, Hidehiko Yoshida*, and Akira Ooshima. Department of Ophthalmology, Faculty of Medicine, Kyoto University, Kyoto 603* and Japan Stroke Prevention Center, Department of Pathology, Shimane Medical University, Izumo 693.

INTRODUCTION The successful establishment of stroke-prone SHR (SHRSP) has given us some clues for both analyzing the mechanisms and exploiting the prescience and prophylaxis of stroke (Yamori, Y. et al.: Clin Exp Pharmacol Physiol Suppl 3:195, 1976). Various approaches applicable to clinical investigation were attempted using SHRSP in our laboratory. In the present study, we examined retinal fundi of SHRSP ophthalmoscopically and conducted histopathological studies of retinal arterioles.

MATERIALS AND METHODS The optic fundi in 72 SHRSP and 47 Wistar-Kyoto rats (WK) at the age of one to 18 months were photographed by fundus camera for small animals (RC-II, Kowa Co., Nagoya, Japan). The grade of the narrowing of retinal arterioles, the irregularity of arteriolar caliber, retinal edema and papilledema in the fundi of these rats were observed and recorded. The photographic slides of fundi were enlarged ten times and the concentric circles were drawn: the center was placed on the center the papilla and the radius was 1.5 times of papillary diameter. All arterioles and venules which crossed this circle were measured to obtain the mean caliber of arterioles (mean A), the mean caliber of venules (mean V), and the mean A/mean V ratios. Eye globes were enucleated, fixed in 10% formalin or 95% ethylalcohol solution, and embedded in paraffin. Then the serial specimens were sectioned 5 μ thick and stained with hematoxylin-eosin.

RESULTS WITH DISCUSSION The narrowing and irregularity of the caliber of arterioles were observed before the age of 6 months in the fundi of SHRSP and their grade increased roughly in accordance with age. But neither retinal edema nor papilledema were found. Over 6 to 8 months of age SHRSP showed the retinal edema and papilledema. The incidence increased approximately in parallel with age. However, the irregularity of the caliber tended to decrease over the age of 8 months (Table). Further, with respect to A/V ratio, similar results were obtained quantitatively. These results suggest that the tonus of the arterial wall became lower due to the organic vascular change in the retinal arterioles and that a decrease in blood flow was due to the thickening of vascular walls.

Changes age	Narrowing		Caliber irregularity		Retinal edema		Papilledema	
	SHR	SHRSP (%)	SHRSR (%)	SHRSP (%)	SHRSR (%)	SHRSP (%)	SHRSR (%)	SHRSP (%)
2M.		+ 100 ++ 0	0	+ 33 ++ 0	0	0	0	0
3-5M.		+ 66.7 ++33.3	+ 71.0 ++ 0	+ 100 ++ 0	+ 57.1 ++ 0	0	0	0
6-8M.		+ 15.4 ++84.6	+ 100 ++ 0	+ 25 ++ 75	+ 100 ++ 0	+ 25 ++ 0	0	0
over 9M.		+ 15.9 ++84.1	+ 89.5 ++10.5	+ 44.2 ++55.8	+ 78.2 ++12.0	+ 32.6 ++36.0	+ 60 ++ 0	+ 10.9 ++63.0

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