10) Myocardial Damage in SHR SP — Histochemical Determination of Smooth Muscle Cell —

Arai C, Fukunaga Y, Abe N, Takeuchi K, Saito M, and
Hasegawa M*, Takayama Y**, Ito H, and Okamoto K***

Laboratory of Clinical Physiology, Faculty of Medicine,
Toho University*, Department of Medical Engineering,
Toho University**, Department of Pathology, Kinki
University School of Medicine***

In order to clarify the myocardial lesions in SHR SP, light-microscopic observations and histochemical determinations were carried out and were compared with those in WKY. Materials consisted of a total of 114 samples (61 samples from WKY and 53 samples from SHR SP) ranging from before 100-day to 500-day level of age. The isolated heart was fixed in 10% formalin and a myocardial corresponding to the proximal part of the left coronary artery was imbedded into paraffin, then sliced to 4 μm thickness with JB-4A type automicrotome, stained with Azocarmin G, and finally determined with MSP method at 545 nm.

In WKY, myocardial architecture disturbance with aging was slight and the myocardial amount showed constant changes between 70 and 95 % E. In SHR SP, the myocardial amount increased due to hypertrophy and swelling up to 200-day level of age but decreased thereafter by fascicular atrophy, disintegration, necrosis, and myocardial disappearance. In all the age periods examined, the mean myocardial amount tended to be high in SHR SP as compared with that in WKY. Especially, significant differences were observed between these two groups on the cardiac external side at 100- and 200-day levels of age, and on its internal side at 100-day level of age. It is suggested that myocardial architecture disturbance in SHR SP is derived from cardiac load due to marked persistent hypertension.