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Ⅱ．日本滞在日程

I arrived in Japan in 3 July, 1996 and entered immediately the Department of Anatomy, Nihon University School of Dentistry. Under the leadership of Prof. Y. Toda, I have engaged in the study of extracellular matrix (ECM) of heart in the early embryonic development. I have learned and mastered some basic technique of laboratory and theoretical knowledge since I came here, and have completed a subject of study and writen a thesis "Histochemical investigation on the distribution of sulfated glycosaminoglycans and proteoglycans in the early embryonic hearts". At the present, I have designed a plan of investigation and continue to investigate the components of ECM on kidney within remain time. The glomerular basement membrance (GBM) and mesangium contain abundant ECM. Under certain pathological conditions, the accumulation of excessive ECM may cause glomerulosclerosis and interstitial fibrosis resulting in end-stage kidney disease. Next study is to investigate the production and distribution of ECM in normal and experimental glomerunephritis. First, experimental models of glomerulonephritis will be made and experimental method will be sought in tow months. Second, the process of ECM components (such as collagen I, III, IV, HSPGs, Fibronectin, Lamin) deposition in the diseased kidney in vivo will be studied by using the methods of molecular biology, which demands at least 4 months.

Ⅲ. 研 究 報 告

Glycosaminoglycans (GAGs) and proteoglycans (PGs) are important components of extracellular matrix (ECM) and have an important effect on heart morphogenesis. Particularly in the regions of the atrioventricular (AV) canal and the outflow tract (OT), in which the endothelial cells undergo a normal transition to form cushion tissue. Abnormal development of cushion tissue can be correlated with the majority of congenital heart defects. Although some studies on the nature and distribution of GAGs and PGs within ECM in the early embryonic heart have been reported. However, previous studies have been mainly focused on some stages of hearts development. A systematic observation of distribution and alterations of GAGs and PGs within ECM in the chick heart of a series stages during the early embryo has not been done. Thus, the study was performed.

Chick embryos at 12-26 stages were analyzed histochemically by alcian blue staining at PH 1.0 to determine presence and distribution of sulfated GAGs and PGs during early cardiac development. The results showed that there were some differences in the distribution pattern and the intensity of the alcian blue positive stained material in these embryonic chick hearts. Alcian blue stained material in the regions of atrioventricular (AV) canal and outflow tract (OT) was well-distributed in these specimens of embryonic hearts from stage 12 to 26, but the intensity of the staining in embryos older than stages 13 was markedly stronger. In the region of the ventricle it still remained markedly positive at stage 12-14, and gradually lessened at the latter stage 15-18 and lost in the later stages. No staining was observed in the regions of the atrium. The result indicated that extracellular matrix (ECM) in the region of AV and OT is rich in GAGs/PGs in the early embryo, this may be correlated with the migration of cushion tissue mesenchyme, whereas in the region of ventricle the GAGs/PGs in the ECM became less and less, this may be correlated with the endothelium remains unactivated.

Ⅳ. 助成金の使途内訳

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