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Report from visiting at University of Veterinary Medicine, Vienna, Austria

10/03/2009 - 20/03/2009

Epicardial telocytes* nurse cardiomyocytes progenitors

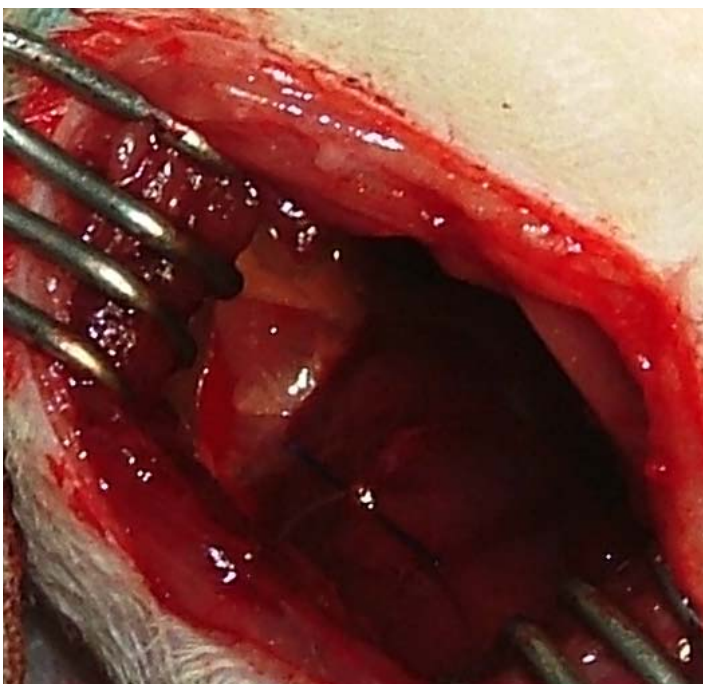
The purpose of the visit

The aim of this visit is to learn to create an experimental model of myocardial infarction in animal in order to study the presence of ICLCs in the infarcted myocardium and to assess the potential of ICLCs in myocardial regeneration. The myocardial ischemia would offer the most proper way for studying the presence, distribution patterns of interstitial Cajal-like cells and their relationship with other myocardial structural elements. Furthermore, the role of the ICLCs in myocardial regeneration after ischemia will be evaluated: interstitial Cajal-like cells may represent a renewable source of proliferating, functional cardiomyocytes and/or can contribute to the development of a network of blood vessels to support and nourish these newly formed cardiomyocytes and the surrounding, ischemic myocardium.

Description of the work

During my visit, the work has been performed within the Laboratory of Prof. Reinhold Erben (Institute of Pathophysiology, Department for Biomedical Sciences, Veterinary University of Vienna). Dr. Kathrin Odörfer worked together with me. She explained me the animal model (rat/mice) used to induce myocardial infarction, from the anatomy and animal physiology point of view. Each step of the surgery was detailed explained. I, theoretically, and then practically, got familiarized with the surgical procedures, maneuvers, and surgical instru-

Left anterior descending coronary artery ligation with Vicryl 6-0 (as ligation material) and Prolene 4-0



Rat ventilation unit



*) telocytes - interstitial Cajal-like cells (Popescu's cells)

mentation. Firstly, I have had the possibility to participate, as observer, into several surgery operations for myocardial infarction by ligation of the left anterior coronary artery (performed by Dr. Kathrin Odörfer), and to observe each step of the surgery. After that, I have had the possibility to perform some steps surgical operations on dead animals especially prepared for ligation of the left anterior coronary artery, for myocardial infarction induction. I may specify that I performed this kind of operation on a living animal. Dr. Kathrin Odörfer also presented me all surgical devices necessary in a rat/mice operation theater, and also the surgical materials.

Description of the main results

The main result of this visit represent the learning of all steps before, within and after the surgery: preparation of animals, surgical procedure of the temporary ligation model and the post-operative care of the experimental animals. The studied experimental model of myocardial infarction will be applied in Bucharest, in order to assess the ultrastructural changes and the presence, distribution, morphology or the role of interstitial Cajal-like cells within the myocardial infarction, ischemia/reperfusion injury.

Future collaboration with host institution/projected articles resulting from my grant

Apparently, our future collaboration will be smooth and presumably profitable for both sides. We, definitely, could co-authorship papers regarding the myocardial infarction and tissue regeneration in ischemia/reperfusion lesions.

Other comments

The visit was instructive. Together with Dr. Kathrin Odörfer I worked to correctly assimilate the steps for obtaining the rat myocardial infarction model. We agree for the future to exchange informations and experience regarding this experimental model. I had a very pleasant time being there and I do believe that this visit represent a good starting point to future co-operation.

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Articles:

1. Epicardium: interstitial Cajal-like cells (ICLC) highlighted by immunofluorescence. Suci L, Popescu LM, Regalia T, Ardelean A, **Manole CG**. *J Cell Mol Med*. 2009 Apr; 13(4): 771-7. PMID: 193829072.
2. Cardiac renewing: interstitial Cajal-like cells nurse cardiomyocyte progenitors in epicardial stem cell niches. Popescu LM, Gherghiceanu M, **Manole CG**, Faussone-Pellegrini MS. *J Cell Mol Med*. 2009 May;13(5): 866-86. PMID: 19382895