ABSTRACT

Masters thesis

Morphological alterations in kidneys in mice with high soluble endoglin levels

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Background: Endoglin (Eng) is a transmembrane glycoprotein also known as an accesory receptor type III for a TGF-β molecule which is expressed primarily on the surface of endothelial cells. Endoglin plays a role in vascular homeostasis, angiogenesis and cardiovascular development. Soluble endoglin (sEng) which is formed by a cleavage of an extracelullar part of a membrane-bound endoglin scavenges the TGF-β molecules in the serum and blocks their binding to the membrane-bound receptor. Soluble endoglin is considered as a trigger of an endothelial dysfunction which is associated with cardiovascular diseases and patogenesis of preeclampsia. The aim of this study is to describe possible effect of high levels of a soluble endoglin on kidney tissue of transgenic mice in comparison with kidneys of mice with low levels of a human soluble endoglin.

Methods: Kidneys of twelve months old mice with high and normal levels of a human soluble endoglin on a standard laboratory diet were fixed in 4% formaldehyde, embedded in paraffin and sliced into 7 μm thin sections. One of these sections was stained with hematoxylin-eosin, the other one with green trichorome. Hematoxylin--eosin staining is used for basic orientation in a histological structure of tissue, staining with green trichrome is used for potencial alterations in a collagenous tissue.

Results and conclusion: After the microscopic observation of kidney preparations we observed some changes in renal tissue in a group of female mice with high levels of a human soluble endoglin. It was particularly about an occurence of hyaline in tubules of renal medulla. We did not confirm presence of hyaline in any other group. We suppose that the presence of hyaline is caused by accumulation of proteins in kidneys, however it is unclear why we did not detect hyaline in males with high levels of human sEng as well.

Keywords: soluble endoglin, kidneys, hyaline, transgenic mouse model