Background: In last decades there were many experimental interventions protecting myocardium against ischemia but aside from early reperfusion none of them was successfully adopted in clinical practice. In our experimental work we try to apply clinical situations into an experimental condition to find out feasible solution how to influence tolerance of myocardium to ischemia. We choose two actual clinical settings: 1. congenital cyanotic heart defects and 2. hypercholesterolemia chronically treated with statins
Aim: To examine: 1. the effect of of perinatal hypoxia to the tolerance of the adult myocardium to acute ischaemia/reperfusion injury with regard to sex; 2. the effect of the acute and chronic statin treatment on the tolerance of the adult rat myocardium to ischemia.
(...) The effect of perinatal hypoxia on myocardial infarct size in adult males and females was not demonstrated. 2. Acute administration of statin to rats in vivo significantly decreased infarct size expressed as IS/LV, in comparison to infarct size expressed as IS/AR the protective effect of statin administration was suggested, but did not reach statistical significance. Acute administration of statin during reperfusion significantly reduced the contractile dysfunction. However, this protective effect of statins was not present after chronic treatment.
Conclusions: The results support the hypothesis that perinatal hypoxia is a primary programming stimulus in the heart, leading to gender-dependent changes in cardiac tolerance to acute oxygen deprivation in later adult life. This fact would have important implications for patients who have experienced prolonged hypoxemia in early life. Statins have an unambiguous cholesterol-independent cardioprotective effect that can be lost after chronic treatment. These results support the idea of possible cardioprotective effect of statin administration in the first-line therapy of acute coronary syndrome.