Abstract
Dexrazoxane (DEX) is clinically used to reduce cardiotoxic efects of anthracycline cytostatics. Its cardioprotective efect is caused by chelatation of free iron and defends myocard against dangerous hydroxyl radicals. This research finds out how dexrazoxane works in ischemic-reperfusion damages of rat's heart.
Each rat was infused by DEX (50, 150, 450 mg/kg) or by control solution. Isolated perfused rat's hearts were exposed to local ischemia for 30 minutes than 10 minutes of reperfusion for studing ischemic arrhythmias followed by 15 minutes of local ischemia and 10 minutes of reperfusion to examine reperfusion arrhythmias. For evaluation of EKG (ventricular arrhythmias) was used software CAR and Lambeth convention. Global ischemias (15 min.) were induced in rat's hearts (DEX 150 mg/kg) and left ventricules were used for HPLC to determinate concentration of glutathion. In vivo experiments rats were infused by DEX 50, 150 mg/kg or control solution and were exposed for 20 minutes to local ischemia and for 3 hours to reperfusion. Infarct size was evaluated based on the cross section of heart (GIMP, Ellipse).
Maximum total number of ischemic arrhytmias decreased by DEX 150 mg/kg (64% comparing to controls). Reperfusion score was reduced by DEX 150 to 48% and percents of ventricular fibrilation was reduced to 20% in comparing to controls (67%). Other doses of DEX had no efect on decreasing of these parametres. DEX also had no efect on reducing marker of oxidative stress (ratio of reduced and oxidized glutathion) and decreasing infarct size.
DEX in dose 150 mg/kg has significant antiarrhytmic potential on rat's hearts (mainly in reperfusion). Its efect on reducing infarct size was not proved.