

PHOSPHODIESTERASE INHIBITORS IN CABG SURGERY. ADVANTAGES AND DISADVANTAGES OF APPLYING MILRINONE AND PAPAVERINE

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OBJECTIVE. Several techniques are available for bypass graft vessel predilatation during coronary artery bypass graft (CABG) surgery. With increasing use of radial artery as a graft it is very important to understand how the predilatation process can be used towards in pharmacological improvement of graft function.

The aim of the present study was to compare the milrinone and papaverine efficiency for vasospasm prevention and their impact on radial artery endothelium.

METHODS: We have studied distal segments of radial arteries obtained by no-touch technique during CABG (N=20, N_{RA} rings = 68). The reactivity of radial arteries was evaluated *in vitro* in isometric tension studies using *ex vivo* myography (organ bath). Vasoconstriction force (expressed in mN) was studied in response to KCl (20 mEq/L; similar to cardioplegy) and increasing concentrations of Phenylephrine. Subsequently vasorelaxation in response to milrinone (0.4 mg/ml) and papaverine (1 mg/ml) was estimated. Simultaneously, evaluation of the impact of milrinone and papaverine on endothelium was studied by **immunofluorescence** detection of CD34 marker of endothelium.

RESULTS: The average vasorelaxation for vessels incubated in milrinone was 15.6 ± 7.8 mN while relaxation induced by papaverine was 20.8 ± 15.2 mN ($p < 0.001$). Similarly papaverine more strongly inhibited following vasoconstriction to KCl (6.0 ± 8.0 for papaverine vs. 26.7 ± 21.5 for milrinone; $p < 0.001$). The endothelial integrity was better preserved after treatment of RA rings with papaverine ($75.3 \pm 12.9\%$) as compared with milrinone ($51.8 \pm 18.0\%$, $p < 0.02$).

CONCLUSIONS: The dose of 1mg/ml papaverine shows greater long lasting vasodilatory peculiarities respectively to 0.4mg/ml milrinone. Furthermore predilatation of radial artery using papaverine solution causes lesser endothelium damage.