

INSULIN ASSOCIATED WITH AN INHIBITOR OF THE RENIN-ANGIOTENSIN SYSTEM (RAS)

DE OLIVEIRA, U.O.; OLIVEIRA, A.R.; IRIGOYEN, M.C.; MACHADO, U.F.; SCHAAN, B.D.

INSTITUTO DE CARDIOLOGIA/FUNDAÇÃO UNIVERSITÁRIA DE CARDIOLOGIA-RS, UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL, PORTO ALEGRE-RS, DEPARTAMENTO DE FISILOGIA, ICB/USP E INCOR, SÃO PAULO, SP.

INTRODUCTION: Data from the literature support a role of insulin in the promotion of cell survival in the context of the post ischemic reperfusion period. Cardioprotection induced by the RAS inhibition was observed in various settings, but not in association with insulin in the ischemia–reperfusion injury.

AIM: To evaluate the effects of insulin associated to the inhibition of the RAS upon cardiac function recuperation in the isolated heart model submitted to ischemia-reperfusion.

METHODS AND RESULTS: Male rats Wistar (n=30, 250-300g) were killed (cervical displacement), the heart quickly removed and studied using a Langendorff perfusion system (10ml/min), with Krebs-Henseleit (SKH) during 25min (stabilization). Global myocardial ischemia was induced (20min), followed by reperfusion (30min). During reperfusion different solutions were employed: SKH (group CT), SKH + insulin (group I), SKH + angiotensin I (group A), SKH + insulin + angiotensin I (group IA), SKH + captopril + angiotensin I (group AC) and SKH + insulin + captopril + angiotensin I (group IAC). Data are expressed as the mean \pm SE, and represent the ratio of reperfusion pressures for the stabilization pressure. Statistical analyses were performed by ANOVA for repeated measures using Tukey's test as a post hoc test. During the reperfusion, the ventricular diastolic pressure (VDP) was higher in the group A (1.88 ± 0.07) as compared to the other groups (CT 1.41 ± 0.07 , AC 1.34 ± 0.07 , I 1.53 ± 0.07 , IA 1.50 ± 0.07 , IAC 1.39 ± 0.07) ($p \geq 0.01$); and the perfusion pressure (PP) was higher in the group A (1.60 ± 0.05) as compared to the groups (CT 0.96 ± 0.05 , AC 1.18 ± 0.05 , I 0.97 ± 0.05 , IAC 1.25 ± 0.05) ($p \geq 0.001$), but it did not differ from the group IA (1.47 ± 0.05). The ventricular systolic pressure and the heart rate did not differ between the groups.

CONCLUSIONS: These preliminary data indicate that RAS inhibition, associated or not with insulin, can prevent the increase in the VDP and in the PP during the reperfusion, which might be cardioprotective.