DRONEDARONE IS ASSOCIATED WITH ALTERATIONS IN OXIDATIVE STATUS. EXPERIMENTAL STUDY ON HYPERTENSIVE RATS

L. Pazó-Sayós¹, R. Martín-Oropesa¹, P. Rodríguez-Rodríguez³, A. Arnalich Montiel¹, MC. González³, B. Quintana-Villamandos^{1,2,4}. ¹Dept. Anesthesiology and Intensive Care, Gregorio Marañón Hospital, Madrid, ²Instituto de Investigación Sanitaria Gregorio Marañón, IISGM, Madrid, ³Faculty of Medicine, Universidad Autónoma de Madrid, ⁴Faculty of Medicine, Universidad Complutense de Madrid

Background and Goal

Study: Our group previously demonstrated that dronedarone has the potential to reverse the left ventricular hypertrophy (LVH) induced by arterial hypertension.¹ We hypothesized that one mechanism could be a reduction in the oxidative stress. In order to prove it, we developed a global oxidative stress index (Oxy-Score) in an experimental model of arterial hypertension.

Materials and Methods: adult male spontaneously hypertensive (SHR) rats were randomly divided into therapy group with dronedarone (SHR-D, n=9) and placebo group (SHR, n=9). Wistar Kyoto rats were used as normotensive controls (WKY, n=9). After 14 days of treatment we assessed the following plasma biomarkers of oxidative status: protein carbonyls, thiols, total antioxidant capacity, superoxide anion scavenging activity and reduced glutathione. We calculated a global score from them using the statistical methodology previously described² (Analysis of the normality, normalization of the parameters, parameter standardization and calculation of the Oxy-Score using this equation: Σ antioxidants - oxidative damage). The groups were compared using single-factor analysis of variance and a post hoc Bonferroni correction was applied. All data were expressed as mean $\pm$ SEM, $P < 0.05$ was considered significant. All procedures were approved by the Ethics Committee of Hospital General Universitario Gregorio Marañón, Madrid, Spain.

Results and discussion:

regarding individual parameters, there were no significant statistical differences among the three groups. Nevertheless, while analyzing the Oxy-Score, we saw interesting differences between SHR and SHR-D group. The SHR Oxy-Score was negative, meaning a predominance of the oxidative damage. Whereas the SHR-D Oxy-Score resulted positive, indicating a predominance of the antioxidant capacity versus the oxidative damage ($p < 0.001$).

Fig. 1 Oxidative stress biomarkers analysis in all three groups (WKY, SHR, SHR-D). A) Carbonyls concentration, B) Total Antioxidant Capacity (TAC), C) GSH concentration D) SOD activity. Data expressed as MEAN $\pm$ SEM. ** $p < 0.01$ vs. WKY.

Fig. 2 Oxy-Score representation. Data expressed as MEAN $\pm$ SEM

Conclusions: The better global antioxidant status developed by SHR treated with dronedarone could contribute to their protection in the regression of LVH.

References:

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