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Introduction & Objectives: Injury caused by ischemia/reperfusion in the kidney remains a critical issue during robotic nephron sparing surgery. Thus, compounds that protect the kidney during these procedures are desired. Resveratrol is a bioflavonoid whose antioxidant effects on the kidney have been evaluated under different conditions, but there are still no quantitative results of the use of this drug after warm renal ischemia. The objectives of this study are to quantitatively evaluate renal cortex histomorphology after warm ischemia and the possible protective effect of resveratrol.

Materials & Methods: Thirty-nine male Wistar rats (9 weeks of age) were divided into 4 groups: Sham (S); Sham Resveratrol (SR); Ischemia (I); Ischemia Resveratrol (IR). The SR and IR groups received 30mg/kg of resveratrol intraperitoneally 60 minutes before the surgical procedure. The I and IR groups had their left renal artery and veins clamped for 60 minutes. The animals were euthanized 4 weeks after the procedure, the blood was collected for serum urea and creatinine determination and kidneys were harvested and fixed. The renal volume (RV), the cortex-non-cortex areas ratio, glomerular volumetric density (Vv[Glom]), volume-weighted mean glomerular volume (VWGV) and number of glomeruli per kidney (Nv[Glom]) were evaluated by stereological methods. The results were compared by one-way ANOVA with Bonferroni's post-test considered significant when the value of $p < 0.05$.

Results: The serum urea in group I was increased in relation to the S group by 9.6%, and no significant differences were observed in IR group when compared to groups S and SR ($p = 0.01$). The cortex-non-cortex areas ratio of the group IR did not show significant differences in comparison with non-ischemic groups (S and SR) ($p < 0.01$). The Vv[Glom] of the group IR was higher in 32.8% when compared to the group I and did not present significant differences when compared to groups S and SR ($p < 0.01$). The Nv[Glom] of group IR presented an increase of 26.2% when compared to the group I and did not show significant differences when compared to groups S and SR ($p = 0.01$). RV ($p = 0.13$) and VWGV ($p = 0.15$) had no significant difference among groups.

Conclusions: Arteriovenous warm renal ischemia promotes a great damage to the renal functional tissue and previous administration of resveratrol has protective effects to the renal cortex, suggesting that this drug can be used preventively in partial nephrectomy. Supported by CNPq and Faperj grants.