

DIRECT EFFECT OF RUSSELL'S VIPER VENOM (RVV) ON RENAL HEMODYNAMICS, URINARY ENZYMES AND THROMBOXANE B₂ IN DOGS

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In this study, we assessed the effects of RVV on renal hemodynamics, urinary enzymes, plasma and urinary TxB₂ in 7 dogs during and after a 40-min intrarenal arterial infusion of RVV (1.25 µg/kg/min). All parameters were determined before and at 20, 40 and 60 min after the beginning of RVV. The urinary enzymes measured included N-acetyl-β-D-glucosaminidase (NAG). γ-glutamyl, transpeptidase (γ-GT), alanine-aminopeptidase (AAP) and β-galactosidase (GAL). Plasma and urinary TxB₂ were measured by radioimmunoassay after extraction and purification steps.

As compared with the control stage, significant change was observed for a decrease in the mean arterial pressure (MAP) during the first 20 min after RVV administration (128.4 ± 7.7 vs. 118 ± 10.2 mm Hg, mean \pm SE, $p < 0.025$) as well as the fractional excretion of sodium (FE_{Na}), potassium (FE_K), and chloride (FE_{Cl}) ($p < 0.05$). The heart rate (HR), renal blood flow (RBF) and glomerular filtration rate (GFR) did not change significantly for all period of observation. Urine flow (V) increased by approximately 15.4-65.4% in 5 dogs and decreased 6.6-32.9% in 2 dogs. U_{NAG} increased significantly 40 min after the commencement of RVV infusion (727 ± 301 VS. 1484 ± 386 units/min, $p < 0.005$). A 7- to 9-fold elevation of U_{TxB₂} was detected for all periods of observation but FE_{TxB₂} was significantly increased during the first 20 min after RVV infusion

This study showed : (1) The changes of RBF and GFR could not explain the rise of V, excretion of electrolytes and TxB₂. They should rather be accounted for by direct tubular dysfunction (2) Plasma TxB₂ increased in parallel with U_{TxB₂} suggesting an augmented synthesis of TxB₂ and/or disturbance of active reabsorption of U_{TxB₂} by tubular cells. (3) The elevation of NAG indicated direct nephrotoxicity of RVV.