Renal Haemodynamic Regulation in Normotensive Wky Rats: Effects of Sympathectomy and Losartan


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This study assessed the impact of sympathectomy and losartan on the interaction of sympathetic nervous (SNS) and renin-angiotensin (RAS) system in renal haemodynamics regulation of normotensive WKY rats. The animals were grouped accordingly: sympathectomized with 6-hydroxydopamine (60HDA) (WKY60HDA), fed with losartan (10 mg/kg) orally for 7 days prior to the acute study (WKYLOS) and a combination of losartan and 60HDA (WKY60HDALOS). In acute study, the animals were anesthetized (60 mg/kg i.p. sodium pentobarbitone) and prepared for blood pressure and renal blood flow (RBF) measurements. Reductions in RBF to electrical stimulation of renal nerve (RNS) and intrarenal administration of noradrenaline (NA), phenylephrine (PE), methoxamine (ME) and angiotensin II (Ang II) were determined. Data were recorded using a computerized data acquisition system and expressed as mean ± s.e.m. and compared by 2-way ANOVA followed by Bonferroni post-hoc test with a significance level at 5%. Following RNS, a smaller vasoconstriction was observed in sympathectomized group (p<0.05) but no change was observed in WKYLOS and WKY60HDALOS as compared to control. Administration of NA and PE produced significant drops (p<0.05) in vasoconstrictions in all groups in comparison with control and in WKY60HDALOS as compared to WKY60HDA. However, responses in WKY60HDA did not differ from WKY60HDALOS. ME caused minimal changes in vasoconstrictor responses in all groups, but there was a greater drop (p<0.05) in WKY60HDALOS as compared to WKY60HDA. Vasoconstrictor responses to Ang II were significantly attenuated (p<0.05) in WKYLOS and WKY60HDALOS but in WKY60HDA enhanced responses (p<0.05) were recorded. Responses in WKY60HDALOS were significantly smaller (p< 0.05) than WKY60HDA. Collectively, it can be suggested that the functions of postsynaptic α1-adrenoceptor subtypes were influenced by binding of Ang II to postsynaptic AT1 receptor and vice versa with possibility of greater participation of α1D in sympathectomized rat indicating a positive cross talk relationship between SNS and RAS.