

ENHANCED VASODILATOR RESPONSES TO CGRP (CALCITONIN GENE-RELATED PEPTIDE) IN SUBCUTANEOUS ARTERIES IN HUMAN HYPERTENSION

H. Lind and L. Edvinsson

Division of Experimental Vascular Research, Department of Internal Medicine, Lund University Hospital, Lund, Sweden

INTRODUCTION

To evaluate alterations induced by essential and renovascular hypertension on vasomotor response to CGRP, substance P, potassium and noradrenaline human subcutaneous vessels were studied. Isolated segments (1 to 2 mm) of small subcutaneous arteries (diameter 0.1 to 0.9 mm) and veins (0.1 to 1.0 mm) with intact endothelium from patients (essential $n = 10$, renovascular $n = 6$) and controls ($n = 17$) were used.

METHODS

In accordance with our previously published method description[1] cylindrical segments (1 to 2 mm long) were mounted on two L-shaped metal prongs, one of which was connected to a force displacement transducer (FT03C) attached to a PowerLab unit for continuous recording of the isometric tension on a PC computer, and the other to a displacement device.

RESULTS

Enhanced dilatory responses (E_{max}) but no change in sensitivity (pEC_{50}) were demonstrated in arteries but not in the veins to CGRP in hypertensives ($p < 0.01$) as compared to normotensives, and in the hypertensives subgroups (essential hypertension $p < 0.05$; renovascular hypertension $p < 0.05$). The maximum dilatory response in the arteries of the controls was ($E_{max} \pm s.e.m.$) $48.6 \pm 8.0\%$ (see Figure). Corresponding values for hypertensives was $78.7 \pm 5.4\%$, (subgroups; essential hypertensives $77.2 \pm 7.2\%$ and renovascular hypertension $82.0 \pm 7.6\%$). The relaxant responses to substance P were not altered neither in arteries nor veins of the hypertensives. Furthermore, there were no differences in the contractile responses to 60 mM potassium or 10 μ M noradrenaline between the groups.

CONCLUSION

The results suggests that the enhanced vasodilator response to CGRP in hypertension is an adaptive reaction. The elevated blood pressure may be augmented by vasodilatory activity since different subgroups of hypertensives showed the same results.

REFERENCE

1. Högestedt, E.D., Andersson, K.E., and Edvinsson, L. (1983) Mechanical properties of rat cerebral arteries as studied by a sensitive device for recording of mechanical activity in isolated small blood vessels. Acta Physiol. Scand. 117, 49–61.

