ANGIOTENSIN II INVOLVEMENT IN REMODELLING OF CAROTIDS SUBJECTED TO PRESSURE OVERLOAD

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Angiotensin II (Ang II) plays an important role in regulation of vascular homeostasis and remodelling. Several evidences indicate that most of the known effects of Ang II are attributable to the AT_1 receptor, but less is known about the AT_2 receptor (1). Our study focused on the role of Ang II and on AT_1 and AT_2 contribute in vascular remodelling occurring in rat carotids subjected to pressure overload.
The employed method, was used to induce ventricular hypertrophy, by transverse aortic constriction (TAC). Briefly, TAC is induced by applying an haemoclip on the transverse section of aorta between the two common carotids in anaesthetized rat.This model causes an overload pressure to the heart and right carotid (RC). After 4 and 8 weeks, the RC was harvsted from TAC and sham rats to evaluate vascular response to Ang II and AT_1 and AT_2 protein expression by Western blot. We reported a significant time-dependent reduction in Ang II-induced contraction in carotids obtained from TAC compared with sham rats ($p<0.05$). AT_1 expression was significantly ($P<0.01$) increased at 4weeks in TAC RC compared to RC sham rats. Furthermore, AT_1 receptor expression at 8 weeks was lower than 4 weeks but any significant difference was observed versus sham. On the other hand, AT_2 receptor expression, at 4 and 8 weeks, was significantly ($P<0.05$) up-regulated compared to sham. In conclusion, pressure overload may induce functional and molecular changes in rat carotids. The vascular hyporeactivity to Ang II could be due to AT receptor expression modification, considering the potential vasodilator effect related to AT_2. Moreover, this data highlight the role of AT_2 receptors modulation on blood vessels remodelling owing to pressure overload.

1. Matatsugu H., Masahiro A., Victor I. D. (1999) Hypertens. 33:613-621.