Relaxin

Although relaxin causes vasodilatation in systemic arteries, little is known about its role in cerebral arteries. Kikkawa et al., investigated the expression and role of relaxin in basilar artery after subarachnoid hemorrhage (SAH) in rabbits.

Microarray analysis with rabbit basilar artery RNA was performed. Messenger RNA expression of relaxin-1 and relaxin/insulin-like family peptide receptor 1 (RXFP1) was investigated with quantitative RT-PCR. RXFP1 expression in the basilar artery was investigated with immunohistochemistry. Relaxin concentrations in cerebrospinal fluid (CSF) and serum were investigated with an enzyme-linked immunosorbent assay. Using human brain vascular smooth muscle cells (HBVSMC) preincubated with relaxin, myosin light chain phosphorylation (MLC) was investigated with immunoblotting after endothelin-1 stimulation.

After SAH, RXFP1 mRNA and protein were significantly downregulated on day 3, whereas relaxin-1 mRNA was significantly upregulated on day 7. The relaxin concentration in CSF was significantly elevated on days 5 and 7. Pretreatment with relaxin reduced sustained MLC phosphorylation induced by endothelin-1 in HBVSMC. Conclusion. Upregulation of relaxin and downregulation of RXFP1 after SAH may participate in development of cerebral vasospasm. Downregulation of RXFP1 may induce a functional decrease in relaxin activity during vasospasm. Understanding the role of relaxin may provide further insight into the mechanisms of cerebral vasospasm [1)].

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Kikkawa Y, Matsuo S, Kurogi R, Nakamizo A, Mizoguchi M, Sasaki T. Upregulation of relaxin after experimental subarachnoid hemorrhage in rabbits. Biomed Res Int. 2014;2014:836397. doi: 10.1155/2014/836397. Epub 2014 Jul 16. PubMed PMID: 25133183.