EARLY STAGES OF ANGIOGENESIS ARE AFFECTED BY C-TYPE NATRIURETIC PEPTIDE IN HUMAN ENDOTHELIAL CELLS

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It was reported previously that C-type natriuretic peptide (CNP) was an effective inhibitor of PAI-1 synthesis and release from human endothelial cells. Plasminogen activator inhibitor type 1 (PAI-1) seems to play an important role in new blood vessels formation. Involvement of C-type natriuretic peptide (CNP) in early stages of angiogenesis and cardiac remodeling vessels permeability has been determined. In the current study we have characterized the effect of CNP on migration, adhesion and proliferation of human endothelial cells and its correlation with the inhibitory effect of CNP on PAI-1 expression. As the strongest inhibitory effect was observed on Tumor Necrosis Factor alpha (TNFa)-stimulated cells, the investigations were carried up also on stimulated cells. Involvement of CNP in the regulation of angiogenic properties of endothelial cells was determined for unstimulated cells and stimulated with VEGF, a potent angiogenesis activator. Cell adhesion and proliferation were evaluated by CyQUANT cell proliferation assay kit. Cell migration was determined by the cell migration test "wound healing-like" assay. Pretreatment with CNP enhanced proliferation of endothelial cells, but the strongest stimulatory effect was observed for VEGF after 72 hours incubation time. Cells cultured in the presence of CNP reveal higher ability to adhere to gelatin, fibronectin and collagen. Stimulatory effect of VEGF was not significantly affected by CNP. The presence of natriuretic peptide caused inhibition of VEGF-stimulated migratory activity of endothelial cells. In the present study we demonstrated that CNP modulates early stages of angiogenesis in human endothelial cells.