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THE ROLE OF GEMININ GENE ON PROLIFERATION OF VASCULAR SMOOTH MUSCLE CELL

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Objectives The proliferation of vascular smooth muscle cells (VSMCs) plays an important role in the pathogenesis of vascular diseases. Geminin is a 25 kDa nuclear protein, which regulate the proliferation of cells through inhibiting the initiation of DNA replication and regulation of cell cycle. The aim of this study was to examine the possible involvement of Geminin in VSMC proliferation.

Methods VSMCs were growth-arrested by incubating in DMEM containing 0.1% normal calf serum for 24 h and then were treated with angiotensin II (Ang II 10^{-8} mol/l), norepinephrine (NE 10^{-6} mol/l) for 48 h to induce proliferation. Immunofluorescence was used to determine the distribution of Geminin protein. We used RNA interference to knock down the Geminin Gene. CCK-8 was used to determine the proliferation of cell.

Results Compared with growth-arrested VSMC, the expression of Geminin was obviously increased after treatment of Ang II and NE and the distribution of Geminin protein gathered in nuclear more, indicating Geminin gene involved in proliferation of VSMC. However, we silenced the Geminin gene by siRNA and found the proliferation of VSMC was not affected and the over-replication of DNA did not appear.

Conclusions Our data demonstrated that Geminin did not participate proliferating and regulating of cell cycle in VSMC. Geminin specific expression in the status of proliferating VSMC indicated that it can be seen as a marker of cell proliferation.