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mirna-27a Targets Sprouty Homolog 2 Expression to Affect Growth of Blood Vessels into Degenerated Intervertebral Disc

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ABSTRACT This study aimed to evaluate the effects of miRNA-27a-targeting sprouty homolog 2 (SPRY2) on nucleus pulposus cell (NPC)-induced angiogenesis of human microvascular endothelial cells (HMEC-1) in degenerated intervertebral disc. Intervertebral disc tissues were collected from patients with scoliosis (control) and intervertebral disc degeneration (IDD). HMEC-1 cells were divided into control, negative control, sh-miR-27a, miR-27a, SPRY2 and miR-27a + SPRY2 groups. The invasive and angiogenic abilities of HMEC-1 cells were detected through Transwell and tube formation assays. TGF-β1 levels in NPCs and mixed medium were detected by enzyme-linked immunosorbent assay. MiR-27a expression in the intervertebral disc tissue of IDD group significantly exceeded that of the control group. In the SPRY2 group, the number of invading HMEC-1 cells decreased ($P<0.05$). Compared with the miR-27a group, the miR-27a + SPRY2 group had weakened invasive and angiogenic abilities, and decreased TGF-β1 expression ($P<0.05$). MiR-27a promotes NPC-induced angiogenesis of HMEC-1 cells through targeted inhibition of SPRY2 expression.