عنوان مقاله:

Downregulation of microRNA-۱۲۵a is involved in intervertebral disc degeneration by targeting pro-apoptotic Bcl-۲ antagonist killer ۱

محل انتشار:

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خلاصه مقاله:

Objective(s): To investigate the role of the microRNA-۱۲۵a (miR-۱۲۵a) and BAK۱ in intervertebral disc degeneration (IDD). Materials and Methods: Degenerative lumbar nucleus pulposus (NP) tissues were obtained from ۱۹۳ patients who underwent resection, and normal controls consisted of normal NP tissues from ۳۲ patients with traumatic lumbar fracture in our hospital. All patients were graded according to the Pfirrmann criteria. QRT-PCR was used to detect the expression of miR-۱۲۵a and BAK۱, and apoptosis of NP tissues detected by TUNEL staining. After isolation of non-degenerative and degenerative nucleus pulposus cells (NPCs), the targeting relationship between miR-۱۲۵a and BAK۱ was verified by dual luciferase reporter gene assay. Flow cytometry was determined the NPCs apoptosis, and Western blot to measure the expressions of BAK۱, Caspase-۳, Bax and Bcl-۲. Results: MiR-۱۲۵a was reduced while BAK۱ was elevated in IDD patients with the increase of Pfirrmann grade. Besides, miRNA-۱۲۵a was negatively correlated to the NPCs apoptosis, while BAK۱ mRNA was positively correlated to cell apoptosis. Additionally, BAK۱ is the target gene of

miRNA-۱۲۵a. When transfection of miR-۱۲۵a mimics in vitro, the apoptosis of NPCs were inhibited, with the down-regulation of BAK۱, Caspase-۳, and Bax, and the upregulation of Bcl-۲. In addition, siBAK۱ can reverse the pro-apoptosis function of miR-۱۲۵a inhibitors in NPCs. Conclusion: miRNA-۱۲۵a may regulate the apoptosis status of the NPCs by inhibiting the expression of its target gene BAK۱, which provided a potential strategy for further development .of IDD therapies

کلمات کلیدی:

Apoptosis, BAK۱ protein, Intervertebral disc degeneration, MIRN۱۲۵ microRNA, Nucleus pulposus