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Effects of miR-27a upregulation on thyroid cancer cells migration, invasion, and angiogenesis

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ABSTRACT. Thyroid cancer is the most common type of endocrine tumor. MicroRNAs (miRNAs) play a critical role in a variety of diseases, especially cancer occurrence and progression. However, the specific mechanism by which miRNAs trigger disease states has not been fully elucidated. This study aims to investigate the role of miR-27a in thyroid cancer cells. A wound healing assay was adopted to examine cell migration. A transwell assay was applied to assess cell invasion. A thyroid cancer xenograft model was established using BALB/c nude mice. Western blot was performed to quantify iNOS expression. Tumor tissue blood vessel density was evaluated via immunohistochemistry assays. The results indicated that miR-27a downregulation inhibited thyroid cancer cell migration, while upregulation of miR-27a promoted thyroid cancer cell migration ($P < 0.05$). Furthermore, reduction in miR-27a expression suppressed thyroid cancer cell invasion ($P < 0.05$). In the

nude mouse model of thyroid cancer xenograft, upregulation of miR-27 induced iNOS expression in pathological tumor tissues, whereas miR-27a inhibition resulted in the opposite effect ($P < 0.05$). CD105 level was also significantly increased during miR-27a upregulation, and was declined when miR-27a was inhibited ($P < 0.05$). In conclusion, miR-27a upregulation in thyroid cancer cells affects tumor cell migration, invasion, and angiogenesis by targeting downstream genes. Therefore, miR27a may act as a biomarker of thyroid cancer.

Key words: Thyroid cancer; miRNA; Cell migration; Cell invasion; Angiogenesis