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The Biological Function and Clinical Significance of Long Non-coding RNA LINC AC008063 in Head and Neck Squamous Carcinoma

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Abstract : Objective The aim is to understand the relationship between the expression level of the long-non-coding RNA LINC AC008063 and the clinicopathological parameters of patients with head and neck squamous cell carcinoma (HNSCC), and to clarify the biological function of LINC AC008063 in HNSCC cells. Moreover, it provides a potential biomarker for the diagnosis, treatment, and prognosis evaluation of HNSCC. Methods: The expression level of LINC AC008063 in the HNSCC was analyzed using transcriptome sequencing data from the TCGA (The cancer genome atlas) database. The expression levels of LINC AC008063 in human embryonic lung diploid cells 2BS, human immortalized keratinocytes HACAT, HNSCC cell lines CAL-27, Detroit562, AMC-HN-8, FD-LSC-1, FaDu and WSU-HN30 were determined by real-time quantitative PCR (qPCR). RNAi (RNA interference) was introduced for LINC AC008063 knockdown in HNSCC cell lines, the localization and abundance analysis of LINC AC008063 was determined by RT-qPCR, and the biological functions were examined by CCK-8, clone formation, flow cytometry, transwell invasion and migration assays, Seahorse assay. Results: LINC AC008063 was upregulated in HNSCC tissue (P<0.001), and verified b CCK-8, clone formation, flow cytometry, transwell invasion and migration assays, Seahorse assayy qPCR in HNSCC cell lines. The survival analysis revealed that the overall survival rate (OS) of patients with high LINC AC008063 expression group was significantly lower than that in the LINC AC008063 expression group, the median survival times for the two groups were 33.10 months and 61.27 months, respectively (P=0.002). The clinical correlation analysis revealed that its expression was positively correlated with the age of patients with HNSCC (P<0.001) and positively correlated with pathological state (T3+T4 T1+T2, P=0.03). The RT-qPCR results showed that LINC AC008063 was mainly enriched in cytoplasm (P=0.01). Knockdown of LINC AC008063 inhibited proliferation, colony formation, migration and invasion; the glycolytic capacity was significantly decreased in HNSCC cell lines (P 0.05). Conclusion: High level of LINC AC008063 was associated with the malignant progression of HNSCC as well as promoting the important biological functions of proliferation, colony formation, migration and invasion; in particular, the glycolytic capacity was decreased in HNSCC cells. Therefore, LINC AC008063 may serve as a potential biomarker for HNSCC and a distinct molecular target to inhibit glycolysis.

Keywords : head and neck squamous cell carcinoma, oncogene, long non-coding RNA, LINC AC008063, invasion and metastasis
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