

Immune-related LncRNAs alter the prognosis of osteosarcoma and are related to the tumor immune microenvironment

Corresponding Author*

Qingshan Huang

Peking University People's Hospital, Beijing 100044, China

Email: weiweili21@163.com

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Introduction

Abnormal expression of LncRNA is closely related to the occurrence and metastasis of osteosarcoma. The tumor immune microenvironment (TIM) is considered to be an important factor affecting the prognosis and treatment of osteosarcoma. This study aims to explore the effect of immune-related LncRNAs (IRLs) on the prognosis of osteosarcoma and its relationship with the TIM. Ninety-five osteosarcoma samples from the TARGET database were included. Iterative LASSO regression and multivariate Cox regression analysis were used to screen the IRLs signature with the optimal AUC. The predict function was used to calculate the risk score and divide osteosarcoma into a high-risk group and low-risk group based on the optimal cut-off value of the risk score. The LncRNAs in IRLs signature that affect metastasis were screened for in vitro validation. ssGSEA and ESTIMATE algorithms were used to evaluate the role of TIM in the influence of IRLs on osteosarcoma prognosis. Ten IRLs constituted the IRLs signature, with an AUC of 0.96. The recurrence and metastasis rates of osteosarcoma in the high-risk group were higher than those in the low-risk group. In vitro experiments showed that knockdown of LncRNA (AC006033.2) could increase the proliferation, migration, and invasion of osteosarcoma. ssGSEA and ESTIMATE results showed that the immune cell content and immune score in the low-risk group were generally higher than those in the high-risk group. In addition, the expression levels of immune escape-related genes were higher in the high-risk group. The IRLs signature is a reliable biomarker for the prognosis of osteosarcoma, and they alter the prognosis of osteosarcoma. In addition, IRLs signature and patient prognosis may be related to TIM in osteosarcoma. The higher the content of immune cells in the TIM of osteosarcoma, the lower the risk score of patients and the better the prognosis. The higher the expression of immune escape-related genes, the lower the risk score of patients and the better the prognosis.

Conclusion

The IRLs signature is a reliable biomarker for the prognosis of osteosarcoma, and they alter the prognosis of osteosarcoma. In addition, IRLs signature and patient prognosis may be related to TIM in osteosarcoma. The higher the content of immune cells in the TIM of osteosarcoma, the lower the risk score of patients and the better the prognosis. The higher the expression of immune escape-related genes, the lower the risk score of patients and the better the prognosis.

Keywords

Immune escape; lncRNA; metastasis; osteosarcoma; tumor immune microenvironment.

Biography

Qingshan Huang is a PhD student at Peking University People's Hospital. He has published more than 5 papers in reputed journals..

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