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Expression analysis of OIP5-AS1 in bladder tissues

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ABSTRACT. Long non-coding RNAs (lncRNAs) have crucial roles in regulation of many aspects of cell functions which are related with carcinogenesis process. The lncRNA Opa Interacting Protein 5-antisense 1 (OIP5-AS1) is among lncRNAs whose roles in some human malignancies have been elucidated. In the current study, we aimed at identification of the role of this lncRNA in bladder cancer. Expression level of OIP5-AS1 was assessed in 50 bladder cancer tissues, the corresponding adjacent non-cancerous tissues (ANCTs) and 30 normal bladder tissues using quantitative real time PCR. OIP5-AS1 was significantly down-regulated in tumor tissues

DISCUSSION

In the current study, we evaluated expression of OIP5-AS1 in bladder cancer tissues, ANCTs and normal bladder tissues. Although OIP5-AS1 was significantly down-regulated in tumor tissues compared with normal bladder tissues, there was no significant difference in its expression between tumor tissues and ANCTs. This lncRNA has been previously shown to be associated with stemness properties in both normal and cancer cells. However, data regarding its role in the tumorigenesis process are inconsistent. While Deng et al. have demonstrated an oncogenic role for this lncRNA in lung adenocarcinoma (Deng J et al. (2018), we detected its down-regulation in lung cancer tissues compared with ANCTs. Arunkumar et al. reported elevated levels of OIP5-AS1 in undifferentiated oral tumors. However, *in vitro* studies have shown that this lncRNA suppresses HeLa cell proliferation probably through interaction with the RBP HuR and reducing its function in targeting cyclins A and D1 transcripts. Such inconsistencies might be partly explained by distinct roles of this lncRNA in each cancer type or the intrinsic dissimilarity in the pathogenesis of certain type of cancer due to geographic-related distinctions or risk exposures. The presence of certain genomic variants within this lncRNA might affect its interactions with its putative targets in distinctive malignancies and influence its role in the pathogenesis of cancer.

The similar expression levels of this lncRNA in tumor tissues and ANCTs might reflect the effect of tumor microenvironment on its expression. A previous study has demonstrated similarities in gene expression pattern between tumor tissues and histologically-normal cancer-adjacent tissues. The authors suggested that this similar pattern of expression might be due to the presence of discrete immune populations in the microenvironment. A comprehensive study in diverse cancer types has shown that ANCT has a discrete expression pattern from both healthy and tumor tissues. Taken together, our study has the advantage of comparison of expression level of OIP5-AS1 in tumor tissues with its expression in both ANCTs and normal tissues.

We could not find any association between transcript levels of this gene and tumor characteristics. Such lack of association might be due to the small sample size of the current study. However, based on the similar expression pattern of this lncRNA between tumor tissues and ANCTs, the failure to show any association between expression levels and clinical data might imply lack of fundamental role of this lncRNA in the pathogenic process of bladder cancer. Future functional studies are needed to explore the effects of OIP5-AS1 up-/down-regulation in modulation of malignant phenotype in bladder cancer cells.

CONCLUSION

As we detected difference in the expression levels of this lncRNA between tumor and normal tissues, we assessed the diagnostic power of this lncRNA in differentiation of disease status between these two sets of samples. Although transcript levels of this lncRNA had 60% sensitivity and 80% specificity in this regard, AUC value indicates that this lncRNA has not the appropriate diagnostic power. However, incorporation of this lncRNA in a putative panel of biomarkers might increase the diagnostic power. Taken together, we suggest assessment of expression level of this lncRNA in larger samples sizes from bladder cancer patients with diverse ethnicities to unravel its participation in the pathogenesis of this cancer.

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CONFLICT OF INTEREST

The authors declare they have no conflict of interest.