**Pan-Cancer Analysis Identifies AIMP2 as a Potential Biomarker for Breast Cancer**

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Aminoacyl TRNA Synthetase Complex Interacting Multifunctional Protein 2 (AIMP2) plays a significant role in controlling cell proliferation and apoptosis. Although the abnormally expression of AIMP2 appeares in many tumor types, its specific functions and effects on tumor immune cell infiltration, proliferation and migration are still unclear. In order to evaluate the role of AIMP2 in tumor immunity in a pan-cancer multi-database, the Cancer Genome Atlas (TCGA), Genotype Tissue Expression (GTEx), and Cancer Cell Lines Encyclopedia (CCLE) datasets were utilized, including the expression level, prognosis, tumor progression, and immune microenvironment. Furthermore, we explored the effect of AIMP2 on breast cancer (BRCA) proliferation and migration using the cell counting kit 8 (CCK-8) assay, transwell assays and western blot analysis. The findings showed that AIMP2 was higher expressed in 24 types of tumor tissue compared with normal tissue. Moreover, AIMP2 was associated with 4 types of tumor stages. Survival analysis showed that AIMP2 expression was strongly associated with Overall survival (OS) in some cancer patients, where the high expression of AIMP2 was associated with a worse prognosis in five types of cancer. Finally, si-RNA mediated knockdown of AIMP2 suppressed the proliferation and migration of BRCA cells in vitro. In conclusion, AIMP2 was found to be differentially expressed in the pan-cancer analysis and might play an important role in tumor immunity, which is expected to be a potential tumor prognostic marker, especially in BRCA.