AB038. P009. Tyrosine kinases and their prognostic value in digestive tract cancers

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Background: Recent studies have revealed that excessive TK activity contributes to tumorigenesis. Consequently, the therapeutic efficacy of targeted TK-inhibitors is currently under investigation in the field of digestive tract cancers. However, a considerable number of TK family members have not been studied in relation to digestive tract cancers. This study aims to analyze the transcriptional expression levels and prognostic roles of tyrosine kinases (TKs) in digestive tract cancers based on data from The Cancer Genome Atlas and Gene Expression Omnibus.

Methods: Gene expression, DNA methylation, and clinical data on seven digestive tract cancers, and GSE62452 microarray data on pancreatic cancer, were downloaded and processed. The Student's t-test and Benjamini-Hochberg method for correcting P value were used to identify differentially expressed TKs. Cox proportional hazards analysis was utilized to perform a prognostic analysis, and the R package ggm was used to conduct a partial correlation analysis. Four factors—age, sex, histologic grade, and pathologic stage—were used to correct P value.

Results: Many TKs were differentially expressed in digestive tract cancers. Five genes—*erb-b2 receptor tyrosine kinase 4*, *platelet-derived growth factor receptor A*, *fibroblast growth factor receptor 1*, *protein tyrosine kinase* 7, and *BMX non-receptor tyrosine kinase*—were differentially expressed in the seven tumors. Moreover, the results of our analysis suggested that TK expression had a strong relationship with the outcomes of patients with gastric, hepatocellular, and pancreatic cancers, but not in those with other cancers. In addition, a wide range of significant relationships existed among TKs in different tumors. The maximum value of seven average correlation coefficients, equaling 0.88, was observed between *fms-related tyrosine kinase 4* and *tyrosine kinase with immunoglobulin-like and EGF-like domains 1*.

Conclusions: In conclusion, many TKs were differentially expressed in digestive tract cancers. TK expression demonstrated prognostic value in patients with gastric, hepatocellular, and pancreatic cancers. Our findings might have wider implications for treatment or drug development of digestive tract cancers.

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