

Association of CTC and MTV in pancreatic cancer

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Background & objectives

Pancreatic cancer is a deadly disease, mainly because of early metastasis. Predicting prognosis of pancreatic cancer patients will increase the survival rate of cancer. Metabolic Tumor Volume (MTV) and Circulating Tumor Cells (CTC) are notable prognostic factors and biomarkers of tumors. But no study has been done about the association of CTC and MTV in pancreatic cancer.

Methods

This study enrolled patients with PDAC who were treated between July 2018 and December 2021 at Gangnam Severance Hospital. DIS- μ Chip was used to isolate CTCs from the blood of pancreatic cancer patients. The association between CTC and MTV was evaluated using the Mann Whitney U test and Pearson's correlation analysis.

Results

Metabolic tumor volume (MTV) and CTC count are correlated in the study ($P < 0.001$). Median Recurrence Free Survival (RFS) was 6.1 months versus 8.4 months in patients with higher CTC counts ($P < 0.05$). Radiomic features of PET CT (gray level non uniformity, entropy, coarseness, joint energy, maximum probability) were also identified to have a relationship with the CTC count. In the multivariate analysis, CTC independently predicted RFS after curative resection of pancreatic cancer. This study showed that CTC counts are higher in patients with larger metabolic tumor volume and heterogenous cancer. Both the CTC counts and tumor volume were strong predictors of RFS after curative resection.

Conclusion

These findings identify the relationship between MTV and CTC. Metabolic tumor volume measurements may provide complementary findings of CTC counts and tumor heterogenous informations. Used together or alternatively, they can be used to anticipate prognosis of pancreatic cancer.