Prognostic significance of Serum Vascular Endothelial Growth Factor per Platelet count in Gastric cancer patients

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Background: New blood vessel formation is an essential step in the process of tumor growth and systemic metastasis. Recent studies have shown that vascular endothelial growth factor expression not only in tissues but also in serum sample is correlated with tumor vascularity, and high serum VEGF levels could predict poor prognosis in cancer patients. However, there are limited data regarding the clinical and prognostic significance of serum VEGF levels per platelet count in advanced gastric cancer.

Methods: 111 patients with histologically confirmed gastric cancer, 10 patients with early gastric cancer were included and control serum samples were acquired from 10 healthy volunteers. The levels of VEGF were measured using human VEGF quantitative enzyme-linked immunosorbent assay. Survival curves were calculated using the Kaplan-Meier method and survival comparisons were made by the log rank test in metastatic gastric cancer. The Cox proportional hazards regression model was utilized for multivariate analyses after univariate analysis defined relevant prognostic variables.Results: The mean serum VEGF level was higher in the patients of advanced gastric cancer (AGC) compared to those with EGC and controls (AGC 465 ± 315.8 pg/ml; EGC 306 ± 97.8 pg/ml controls 230.8 ± 53.2 pg/ml, P< 0.033). A trend toward a significant positive correlation between serum VEGF and platelet counts was observed in patients of AGC (r = 0.477, P = 0.000) and there was a significant correlation between serum VEGF levels and differentiation of tumor (p = 0.014), stage (p = 0.036). The overall survival (log rank, p =0.0432) and the progression free survival (median 4.5 vs. 8.9 months; log rank, p =0.0116) were significantly shorter in patients with high VEGF per platelet count (>1.626 pg/106). In the multivarivate analysis, performance status (P=0.025), the presence of peritoneal carcinomatosis (P=0.006), serum VEGF per platelet (P=0.005) were found to be significantly associated with poor progression free survival.

Conclusions: This study demonstrates that serum VEGF per platelet count is correlated with poor overall survival and progression free survival in patients with advanced gastric cancer. Therefore, Measurement of serum VEGF per platelet could be a useful marker for predicting disease progression and prognosis of advanced gastric cancer. It will also be helpful to decide whether to use VEGF target therapy to inhibit angiogenesis of gastric cancer.