C-Reactive Protein as a Prognostic Biomarker for Advanced Renal Cell Carcinoma Treated with Sunitinib

Introduction and Objective: Since the introduction of sunitinib for patients with advanced renal cell carcinoma (RCC), significant objective responses have been reported. However, a prognostic marker is needed for selecting patients who will benefit most from sunitinib. Previous studies have shown that an elevated C-reactive protein (CRP) level predicts poor survival in patients with metastatic RCC treated with immunotherapy. In this study, we focus on non-tumor characteristics, including CRP, that can predict sunitinib effectiveness.
Materials and Methods: Between December 2008 and August 2011, 41 consecutive patients with advanced clear-cell RCC treated with sunitinib were enrolled in this study. Non-tumor variables were selected from pre-treatment characteristics and adverse events that occurred during the study. Logistic regression analysis estimated the relative importance of non-tumor variables, including CRP, and selected adverse events as predictive factors for sunitinib responses.
Results: Overall, 11 patients (26.8%) demonstrated a partial response and 10 patients (24.4%) had stable disease. On univariate analyses, Memorial Sloan-Kettering Cancer Center non-poor risk, normal CRP, hand-foot skin reaction, altered taste, fatigue, and leukopenia were significantly correlated with objective responses (P = 0.0206, 0.0011, 0.0069, 0.0064, 0.0238, and 0.0377, respectively). On multivariate analysis, normal CRP was independently associated with objective response (P = 0.0163). Based on this result, patients were grouped into two cohorts: those with normal CRP levels ($\leq$ 0.30 mg/dL) and those with elevated CRP levels ($>$ 0.30 mg/dL). Patients with a normal level of CRP had a significantly higher objective response rate (84.6% *vs* 35.7%, P = 0.0012) and significantly longer progression-free survival time (median 19.0 *vs* 6.0 months, P = 0.0361) than patients with an elevated level of CRP.
Conclusions: CRP is a significant independent prognostic indicator for patients with advanced RCC treated with sunitinib. Pre-treatment CRP level could be a useful biomarker for response to sunitnib treatment. Further study is needed to clarify the prognostic role of CRP with not only sunitinib but also other targeted agents.