Clinical Implications of C-Reactive Protein as a Prognostic Marker in Advanced Cancer Patients in Palliative Care Settings


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**Abstract**

Plasma C-reactive protein (CRP) levels are elevated in patients with advanced cancer. **Objective** To investigate CRP as a prognostic marker in palliative settings. **Methods** This multicenter prospective cohort study comprised 2426 patients. Laboratory data were obtained at baseline, and all patients were followed until death or six months after their enrollment. A total of 1511 patients were eligible for the analyses. They were divided into four groups: low- (CRP < 10 mg/l), moderate- (10 ≤ CRP < 50 mg/l), high- (50 ≤ CRP < 100 mg/l) and very high-CRP (100 mg/l ≤ CRP). Survival was investigated by the Kaplan-Meier method with the log-rank test. The 30-, 60- and 90-day mortality rates were tested by Chi-square tests. Uni- and multivariate adjusted hazard ratios (HRs) and 95% confidence intervals (CIs) in each group were calculated using Cox proportional hazard models. **Results** Survival rate decreased and mortality rate increased with increasing CRP level. The differences in survival and 30-, 60- and 90-day mortality rates among the groups were statistically significant (P < 0.001). Baseline CRP level was significantly associated with a higher risk of mortality after adjustment for age, gender, primary tumor site, metastasis, chemotherapy, Eastern Cooperative Oncology Group Performance Status and setting of care (moderate-CRP: HR 1.47 [95% CI 1.24-1.73]; high-CRP: HR 2.09 [95% CI 1.74-2.50]; very high-CRP: HR 2.55 [95% CI 2.13-3.05] vs. low-CRP). **Conclusion** Clear dose-effect relationships between elevated CRP levels and prognoses indicate that CRP could be useful in predicting prognoses in patients with advanced cancer.

**Strengths:** First large study of its kind; multicentre with large sample size (2426 patients); significance of data after adjustment for age, gender, primary tumor site, metastasis, chemotherapy, ECOG performance status, and setting of care; observations conducted within routine clinical practice (no extra blood tests); results are clinical applicable (hazard ratios, mortality rates)

**Weaknesses:** Study done in Japan and may be different in other populations (CRP levels would differ among individuals in various ways); No differentiation between tumors that synthesize CRP and plasma CRP; high CRP very non-specific and could be affected by acute infections or medical conditions that improve over time (confounding factors); excluded patients who died from unexpected complications; other potential confounders including smoking and BMI; no reference of grouping for CRP values

**Applicability to Palliative Care:** CRP is widely available and inexpensive; could improve treatment allocation and survival of patients with advanced cancer; could be used as an independent prognostic factor and another tool to help us improve approximation of survival (ex. whether patient should enter hospice)