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

Reference: Amano K, Maeda I, Morita T, Miura T, Inoue S, Ikenaga M, Matsumoto Y, Baba M, Sekine R, Yamaguchi T, Hirohashi T, Tajima T, Tatara R, Watanabe H, Otani H, Takigawa C, Matsuda Y, Nagaoka H, Mori M and H Kinoshita. 2016. Clinical Implications of C-Reactive Protein as a Prognostic Marker in Advanced Cancer Patients in Palliative Care Settings. Journal of Pain and Symptom Management (in press, accepted manuscript, available online Jan. 28, 2016)

Presented by: Sing-Chi Lam R2, February 4, 2016

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)