

Pretreatment Anemia is Associated with Poor Prognosis in Stage I and II Gastric Cancer Patients

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Background and Objectives: A negative correlation between anemia and outcome has been demonstrated in various cancers treated with radiotherapy. However, it is rarely studied whether this correlation may exist in surgical setting. Our aim was to investigate the relationship between pretreatment anemia and survival in surgically treated patients with gastric cancer.

Methods: A total of 1688 patients who had undergone curative resection for gastric cancer between 1991 and 1995 were reviewed. Anemia was defined as a hemoglobin level < 12.0 g/dL. The influence of anemia on survival was evaluated by univariate and multivariate analysis.

Results: Pretreatment anemia was present in 39.9% of the patients. The 10-year survival rate in anemic patients was 48.6% as compared with 61.3% in nonanemic patients ($p < 0.001$). In subgroup analysis according to the stage, the significant difference in 10-year survival rate between anemic and nonanemic patients was only found in stage I and II gastric cancer (76.9% vs. 83.9% in stage I, $p = 0.034$; 55.7% vs. 67.5% in stage II, $p = 0.044$). On multivariate analysis, anemia was an independent prognostic predictor in patients with stage I and II disease ($p = 0.009$; RR, 1.453; 95% CI, 1.099~1.921).

Conclusions: Pretreatment anemia was found to have an independent relationship to the long-term survival of patients with stage I and II gastric cancer. To address the true features of the relation between systemic anemia, tumor hypoxia and prognosis as well as to elucidate the effect of pre-operative correction of anemia on prognosis, well-controlled prospective trials should be encouraged in future studies.