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Factors Related to Weight and Albumin Affecting Neutropenia in Korean Solid Cancer Patients

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Many chemotherapy regimens are associated myelosuppression, especially neutropenia. In cancer patients, neutropenia severely compromises innate immunity to microbial pathogens and increase the risk of developing serious microbial infections subsequent to chemotherapy. Neutropenia and its infectious complications represent the most common adverse effect of cytotoxic cancer chemotherapy. The magnitude of neutropenia depends in the intensity of the chemotherapy regimen and sequential order of drug administration, with the risk of infection and mortality being directly related to the degree and duration of neutropenia encountered. In addition, the duration of hospitalization and economic loss could increase as the duration of neutropenia increase. Therefore, in clinical practice, it is required to predict the factors related to risk of neutropenia for preventing the incidence and reducing the duration. The purpose of this study was identifying and evaluating the factors which contribute to neutropenia, especially focused on the body weight and albumin. Data were collected retrospectively from solid cancer inpatients having chemotherapy at Seoul National University Bundang Hospital between January 2007 and August 2007. Factors affecting the duration of neutropenia was evaluated through univariate correlation analysis, t-test and multivariate regression analysis. Seventy patients were included in this study. As a result of univariate correlation analysis, each factor including body mass index (BMI) before chemotherapy (kg/m^2), percentage of weight loss (%), serum albumin level before chemotherapy (g/dL) had the significant relationship with the duration of neutropenia resulting from chemotherapy ($\alpha=0.05$). The duration of neutropenia was significantly larger in patient who

had BMI before chemotherapy under 18.5 kg/m^2 , percentage of weight loss during chemotherapy over 1 %, serum albumin level before chemotherapy under 2.8 g/dL , incidence of hypoalbuminemia after chemotherapy ($\alpha=0.05$). Three factors, serum albumin level before chemotherapy ($p=0.005$), percentage of weight loss during chemotherapy ($p=0.016$) and BMI before chemotherapy ($p=0.042$) were selected for relationship with the duration of neutropenia through stepwise multivariate regression analysis and the model was the duration of neutropenia (days) = $-1.384 \times \text{serum albumin level before chemotherapy} + 0.172 \times \text{percentage of weight loss during chemotherapy} - 0.190 \times \text{BMI before chemotherapy} + 11.471$ ($p=0.001$). Among several factors related to body weight and albumin, BMI before chemotherapy, percentage of weight loss during chemotherapy, serum albumin level before chemotherapy, incidence of hypoalbuminemia resulting from chemotherapy affected the duration of neutropenia significantly. There were not many studies done about the effect of body weight and albumin to the duration of neutropenia, and hopefully, we can apply findings of this study to clinical practices for the more accurate prediction of the risk and more effective prevention of neutropenia

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