Risk factors for febrile neutropenia in patients with unresectable pancreatic cancer receiving FOLFIRINOX as the first-line treatment

M. Sasaki1, H. Ueno1, A. Kuchiba1, F. Koga1, S. Shiba1, S. Sakamoto1, S. Kondo1, C. Morizane1, T. Okusaka1
1Department of Hepatobiliary and Pancreatic Oncology, National Cancer Center Hospital, Japan, Chuo-ku, Japan
2Biostatistics Division, Center for Research Administration and Support, National Cancer Center, Chuo-ku, Japan

Introduction: Unresectable pancreatic cancer (URPC) is associated with a poor prognosis. Treatment with FOLFIRINOX has been shown to improve the outcomes, but can be associated with significant toxicity. A high incidence of febrile neutropenia (FN) (22%) was reported from a Japanese phase II trial of FOLFIRINOX. The aim of this study was to clarify the risk factors for FN in these patients.

Methods: A retrospective analysis was performed of the data of patients treated with FOLFIRINOX for histologically proven URPC between July 2011 and January 2015 at the National Cancer Center Hospital, Japan. Patients who had received prior chemotherapy or radiation therapy, or who had the UGT genetic polymorphisms of homozygous UGT1A1*6 or UGT1A1*28 or heterozygous UGT1A1*6 and *28 were excluded. The demographic and baseline characteristics were compared between patients with FN and without FN by Fisher’s exact test for categorical variables or Mann-Whitney’s U test for continuous variables. The logistic regression model was used to estimate odds ratios (ORs) of the potential risk factors for the development of FN.

Results: A total of 38 patients were included in this analysis. The patient characteristics were as follows: median age, 60 years (range, 22 to 72); male/female, 26/12; PS 0/1, 22/16; UICC-TNM stage III/IV, 12/26; primary site head/body-tail, 16/22; biliary intervention yes/no, 10/28; UGT genetic polymorphisms wild type/UGT1A1*6 or *28 heterozygote, 26/12. The median number of cycles administered was 6 (range, 1 to 22). During the first 2 cycles of treatment, FN occurred in 23.6% of the patients. There were no treatment-related deaths. A multivariate logistic regression analysis showed that the pretreatment platelet count \(\leq 15 \times 10^4/\mu L\) (OR: 8.07, 95% CI: 1.03 to 63.2, \(p = 0.047\)) and heterozygous UGT1A1*6 or *28 (OR: 8.60, 95% CI: 1.36 to 54.2, \(p = 0.022\)) were significantly associated with higher risk of FN.

Conclusion: Pretreatment Platelet count \(\leq 15 \times 10^4/\mu L\) and presence of heterozygous UGT1A1*6 or *28 might be risk factors for the development of FN in URPC patients receiving FOLFIRINOX. The predictive factors proposed in our study could be utilized to select URPC patients at a high risk for the development of FN who may benefit from dose reduction or G-CSF prophylaxis.