Association between febrile neutropenia and use of G-CSF in chemotherapy of extensive-disease small-cell lung cancer

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Background: Prophylactic granulocyte colony-stimulating factors (G-CSF) for patients with small-cell lung cancer (SCLC) is covered by health insurance. Guidelines advise prophylactic G-CSF in the chemotherapy if risk of febrile neutropenia (FN) is more than 20%. Pegfilgrastim was approved recently and is expected to use more frequently. However, we need to find out the subjects to use it from the angle of health economics.

Purpose: To decide the patients group need not receive prophylactic G-CSF for chemotherapeutic treatment for extensive disease (ED)-SCLC.

Methods: We investigated 203 patients with ED-SCLC treated for the first time with chemotherapy alone during January 2003 to December 2013. Then we assess the relationship between the use of G-CSF and the incidence of FN. We analyzed the characteristics of these patients related to the incidence of FN retrospectively.

Results: The patients were 168 male and 35 female, median age 69 (43-86), PS 0-1/2-3 70.7/29.3%. There were 68 patients (33.5%) who developed FN. The incidences of FN each regimen are as follows: Carboplatin plus Etoposide (CE) 21.7%, Cisplatin plus Etoposide (PE) 27.8%, Cisplatin plus Irinotecan 19.2%. The patients groups with serum albumin more than 4.0 g/dl (OR: 5.75, 95%CI: 1.05-52.55, p = 0.04) and serum aspartate aminotransferase less than 40 IU/l (OR: 6.78, 95%CI: 1.32-39.63, p = 0.02) were significantly less likely developed FN in CE therapy group.

Conclusions: We suggest that ED-SCLC patients with CE or PE therapy need prophylactic G-CSF to prevent FN. On the other hand, the patients, if sufficient serum albumin and normal serum aspartate aminotransferase level, may not be always necessary to use prophylactic G-CSF in CE therapy group.