Dose dependent effects of G-CSF on CA 27.29 in early stage breast cancer patients


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Background

13% of 2556 patients (pts) examined in the SUCCESS trial showed elevated levels of Ca27.29 only after chemotherapy (SABCS2008). Recently a possible relationship between the administration of G-CSF and a rise in the tumor marker could be demonstrated. This analysis focuses on the dose dependency of this effect.

Methods

The SUCCESS Trial is a phase III trial comparing FEC-Docetaxel vs. FEC-Doc-Gemcitabine regime and 2 vs. 5 years of treatment with zolodronate in 3754 patients with primary breast cancer and node positive or high risk for relapse disease. Blood samples for the analysis at hand are taken before and after chemotherapy (CHT). CA27.29 has been measured with ST AIA-PACK Ca27.29 reagent using MUC-1 for AIA-600 II (Tosoh Bioscience, Tessenderlo, Belgium). The cutoff for Ca27.29 is 32 U/ml. For chi² analysis patients were grouped to CA27.29 raise or no raise and 1 to 6 cycles with G-CSF or no G-CSF at all. The difference of CA27.29 before and after CHT has then been correlated with the number of G-CSF cycles administered.

Results

The analysis of Ca27.29 is based on the data of 2556 pts. 1252 pts (49%) received at least one course of G-CSF. 338 pts (13%) exceeded the threshold for CA27.29 only after CHT. In this group 209 pts (62%) received G-CSF and 129 (38%) did not. 1043 pts with stable or decreased CA27.29 received G-CSF (47%) and 1175 did not (53%). This difference was highly significant (p<0.0001). Correlating the number of G-CSF cycles a patient got during CHT with the absolute difference in Ca27.29 levels before and after CHT showed a highly significant positive correlation of 0.13 (Spearman-Rho; p<0.0001[two-sided]).

Discussion and Conclusion

This analysis gives strong evidence that at least part of the elevation of CA27.29 post CHT is connected to the application of G-CSF during CHT. There is also a positive correlation of the increase in CA27.29 levels and the dose of G-CSF administered to the patient. This could be an important part of the explanation why MUC-1 based tumor markers tend to increase during CHT. Whether this effect is due to an increased liberation during leukopoiesis or direct or indirect effects on remaining tumor cells needs to be further evaluated.