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Effects of G-CSF on circulating tumor cells (CTC) and CA 27.29 in breast cancer patients

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Background

Some recent publications indicated that the use of G-CSF could be connected to an increase in CTC as well as elevated levels of tumor markers such as CA 27.29.

In the SUCCESS Trial CTC and CA27.29 are examined before and after adjuvant chemotherapy (CHT) in 3754 breast cancer patients (pts).

SUCCESS	Patie	Patients' characteristics					
	Tum	norstage *	Nodal status				
R Falintia Trainad	T1 T2 T3 T4	40% 50% 6% 1%	N0 N1 N2 N3	34% 46% 14% 6%			
Decentered 100 regime q1w	Menop	Menopausal status		Her2/neu status *			
Destinant Pring fair, Genanite Name 1,000 ang fair di Ji qu'er Zolondronante Augus 2,010 (h.	pre post	43% 57%	positive negative	21% 75%			
fellowed by optimation Transmitter 20 mg ofd y as 2 a give Generatio 3 d ng toper 2 a to processing that it reasons	Hormo yes	ne sensitive 79%	Avg. age at diagnosis 53 years * Difference to 100%: missing value				
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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 zoledronate in patients with primary breast cancer (BC) (N+ or high risk). Blood samples are taken before and after CHT. CTC were assessed with the CellSearchSystem (Veridex, Warren, USA). After immunomagnetic enrichment with an anti-Epcam-antibody, cells were labeled with anti-cytokeratin (8,18,19) and anti-CD45 antibodies to distinguish epithelial cells and leukocytes. CA27.29 has been measured with ST AIA-PACK Ca27.29 reagent using MUC-1 for AIA-600II (Tosoh Bioscience, Tessenderlo, Belgium). The cutoff for CA27.29 is 32 U/ml and >1 cell for the CTC analysis. Patients were grouped to CTC/CA27.29 raise or no raise and 1 to 6 cycles with G-CSF or no G-CSF at all.



Results

Data on 1510 pts are available for CTC analysis. 745 pts (49%) received at least one course of G-CSF. 117 pts (8%) showed an increase in CTC after CHT. In this group 52 (3%) pts received G-CSF and 65 (4%) did not. 693 pts with stable or decreased CTC received G-CSF (46%) and 700 did not (46%). There was no significant difference (p=0.29).

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 (8%) received G-CSF and 129 (5%) did not. 1043 pts with stable or decreased CA27.29 received G-CSF (41%) and 1175 did not (46%). This difference was highly significant (p<0.0001).

				G CSE and Ca27 20					
G-COF and CTC		G-CSF Application			0-001 and 0a21.29		G-CSF Applicatio		
		No	Yes	Total			No	Yes	Tot
Increased CTC after Chemotherapy	No	46,4%	45,9%	92,3%		No	46,0%	40,8%	86,8
	Yes	4,3%	3,4%	7.7%	Chemotherapy	Yes	5,0%	8,2%	13,2
	Total	50,7%	49,3%	100,0%		Total	51,0%	49,0%	100.0

Conclusion

No evidence can be provided for a significant correlation between an increase in the number of CTC and the application of G-CSF over CHT. Nevertheless the results on CA27.29 showed a highly significant correlation between the administration of G-CSF and elevated CA27.29 levels directly after CHT.

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