

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

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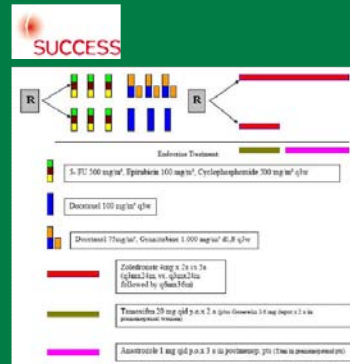
## Background

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).

## Methods

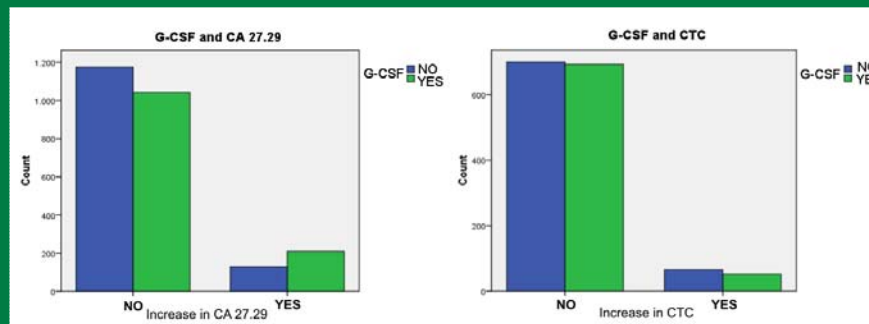
The SUCCESS Trial is a phase III trial comparing FEC-Docetaxel vs. FEC-Doc-Gemcitabine regime and 2 vs. 5 years of treatment with zoledronate in patients with primary breast cancer (BC) (N+ or high risk). Blood samples are taken before and after CHT. CTC were assessed with the CellSearchSystem (Veridex, 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.



## Patients' characteristics

Tumorstage *		Nodal status	
T1	40%	N0	34%
T2	50%	N1	46%
T3	6%	N2	14%
T4	1%	N3	6%
Menopausal status		Her2/neu status *	
pre	43%	positive	21%
post	57%	negative	75%
Hormone sensitive		Avg. age at diagnosis	
yes	79%	53 years	
no	21%		

\* Difference to 100%; missing value



## 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-CSF and CTC		G-CSF Application		
		No	Yes	Total
Increased CTC after Chemotherapy	No	46.4%	45.9%	92.3%
	Yes	4.3%	3.4%	7.7%
Total		50.7%	49.3%	100.0%

G-CSF and Ca27.29		G-CSF Application		
		No	Yes	Total
Increased Ca27.29 after Chemotherapy	No	46.0%	40.8%	86.8%
	Yes	5.0%	8.2%	13.2%
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.