CA 27.29 as a tumour marker for risk evaluation and therapy monitoring in patients with primary breast cancer

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Background

Several trials (1) show that the use of tumor markers (TM) leads to an early diagnosis of tumor dissemination in breast cancer patients. Whether this improves the prognosis is still under discussion. 3754 patients have been enrolled in the SUCCESS Trial to evaluate the role of CA27.29 as a prognostic marker and as a tool for therapy monitoring. Therefore measurement of CA27.29 (2,3) blood levels was planned before and after adjuvant chemotherapy as well after 2 and 5 years of follow up.

Methods

The SUCCESS Trial compares FEC-Docetaxel (Doc) vs. FEC-Doc-Gemcitabine (Doc-G) regime and two vs. five year treatment with Zoledronat in patients with primary breast cancer (N+ or high risk). 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 positivity of CA27.29 is 32 U/ml.

Results

2669 patients have been examined prospectively before and after chemotherapy. 22.0% of patients had a marker >24 U/ml (n=587, mean 19.00, range 3.04-410.00) before and 39.6% (n=1058, mean 23.34, range 2.70-330.76) after chemotherapy. The correlation between both values was significant (p<0.0005).
While 17% showed elevated CA27.29 before and after therapy, 5% patients changed from positive to negative for CA27.29 afterwards. 55% were negative before and after therapy whereas 23% became positive after treatment. Before treatment the revalence of elevated CA27.29 was equally distributed between the FEC-Doc and the FEC-Doc-G arm. After treatment 34.1% in the FEC-Doc arm showed an increased level vs. 45.6% in the FEC-Doc-G arm. The correlation analysis showed no significant coherence between hormonal status (ER: p<0.323; PR: p<0.078), HER2/neu status (p<0.308), Grading (p<0.565) and CA27.29 level. However, tumor size (p<0.020) and the nodal status (p<0.022) were significant associated with Ca27.29 levels.

Discussion

The results presented in this analysis raise different new questions. Especially the 16 % of patients who switched from negative before chemotherapy to positive CA27.29 blood levels afterwards will be worth to look at in the course of the study since up to date there is no consistent interpretation for this phenomenon. But especially the further development of the 4 % switching to negative levels compared to those 5% who stay positive will allow to draw interesting conclusions about the predictive value of CA27.29 in the further follow up.

Conclusion

These results might indicate a close relation between elevated Ca27.29 blood levels and tumor mass at primary diagnosis. Whether this marker is useful for treatment monitoring will be shown by further follow-up in the Success-trial.

CA 27-29 before and after chemotherapy (CHT) in 2669 pat.

			After CHT	
			negativ	positiv
			79% 2094 pat.	21% 575 pat.
Before CHT	Negativ	91% 2436 pat.	75% 2009 pat.	16 % 427 pat.
	positiv	9% 233 pat.	4% 85 pat.	5 % 148 pat.

Ca 27.29 correlates with:
- tumor size (p<0,022)
- nodal status (p<0,022)

Ca 27.29 doesn't correlate with:
- grading (p<0,565)
- Her2/neu status (p<0,308)
- estrogen receptor status (p<0,323)
- progesterone receptor status (p<0,078)

Before CHT
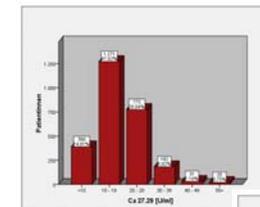
After CHT
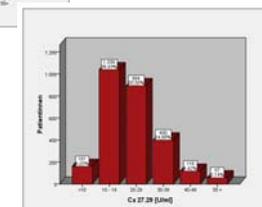
References

(1) Chan DW, Beveridge RA, Muss H, Fritsche HA, Hortobagyi G, Theriault R et al. Use of truquant BR radioimmunoassay for early detection of breast cancer recurrence in patients with stage II and stage III disease. J.Clin.Oncol. 1997;Journal-of-Clinical-Oncology. 1997; 15:6-2328.
(2) Emens LA, Davidson NE. The follow-up of breast cancer. Semin.Oncol. 2003;30:338-48.
(3) Gion M, Mione R, Leon AE, Luftner D, Molina R, Possinger K et al. CA27.29: a valuable marker for breast cancer management. A confirmatory multicentric study on 603 cases. EUR.J.CANCER 2001;37:355-63.