Abstract P1-04-10: Assessment of circulating tumor cells (CTC) by RT/PCR as a surrogate marker for PFS in metastatic breast cancer (MBC)

MM Saber, AA Bahnasy, HM El-Zawahry, NM Allahoubi, MA El-Moetii, RM Abd El Fatah, S Aid, and M Ghareeb

DOI: 10.1158/0008-5472.SABCS13-P1-04-10 Published December 2013

Abstract

Background: Despite significant improvements in the treatment of metastatic breast cancer (MBC), it remains an incurable disease. The presence of circulating tumor cells (CTC) predicts for progression free survival (PFS) in (MBC) patients. We hypothesized that the change in level of CTCs can be a good surrogate marker for PFS.

Methods: CTC level was determined by flow cytometry (FCM) in the blood of MBC female patients with measurable or non-measurable evaluable disease excluding CNS metastasis 1) before starting taxanes (Docetaxel or Paclitaxel) regimen, 2) after the first cycle, and 3) at assessment of the disease after 3-4 cycles. The breast origin was further confirmed through assessment of CK19, mammaglobin, prolactin inducible peptide (PIP), aldehyde dehydrogenase 1 (ALDH1) and human chorionic gonadotropin (hCG) in the separated CTCs by quantitative real time PCR (QRT-PCR). CTC level and level of these markers were correlated with the clinical features of the patients, response to treatment and PFS.

Results: Sixty-six female patients were enrolled between May 2010 and Jan. 2011. The median age was 48.9 years and duct carcinoma was the main pathologic subtype. After a median follow up period of 20 months, median PFS was 6 months. There was a very strong relation between the selection marker CK-19 and the breast cancer markers (p value = 0.0001). Patients with baseline CTC < 4 had significantly higher median, 6 months and 1 year PFS when compared with those with CTC ≥ 4 (p value = 0.03) while CTC levels did not correlate with PFS in the 2nd & 3rd samples respectively (p value = 0.28). Also patients whose CTC level decreased after treatment had significantly prolonged median PFS compared to patients whose CTC level increased (10 versus 4 months, p = 0.007).

Conclusions: CTCs; measured by RT-PCR were strongly predictive of PFS in MBC. CTC also could be of a great potential value in early assessment of response to chemotherapy after the 1st cycle especially in non-measurable lesions.

Key Words: Circulating tumor cells, metastatic breast cancer, progression free survival and RT-PCR.

Citation Information: Cancer Res 2013;73(24 Suppl): Abstract nr P1-04-10.