PUBLICATIONS

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Viable Circulating Ensembles of Tumor Associated Cells Persist in Patients with No Radiologically Detectable Disease After Treatment in Breast Cancer

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ABSTRACT

Background
The success of treatment in Breast cancer is ascertained by radiological imaging as per standard of care protocol, PET-CT being the modality of choice. However, even in cases where complete resolution of the disease is noted radiologically, recurrence or emergence of new metastases in not uncommon. To explore the underlying cause of such recurrence, we hypothesized that Circulating Metastatic Disease (CMD) in the nature of viable tumor cells or clusters would be a persistent systemic feature of Breast cancer although there may be no overt evidence of disease.

Methods
We obtained 15 ml blood from 927 known and previously treated cases of Breast cancers just prior to a PET-CT scan. Peripheral Blood Monoculear Cells (PBMCs) were harvested by centrifugation. Circulating Ensembles of Tumor Associated Cells (C-ETACs) which are clusters of heterotypic apoptosis resistant cells of tumorigenic origin were enriched by a novel process using combination of commercially available stabilizing agents. C-ETACs were characterised by immunostaining for EpCAM, Pan-CK and Cd45 as well as GCDFP-15 or GATA3.

Results
Out of 927 patients who underwent PET-CT scan 731 (78.9%) had positive findings on radiological scan indicating residual disease while 196 patients (21.1%) had no radiologically detectable disease. Shockingly, in this cohort of 196 patients C-ETACs were detected in 171 (87.2%). There appeared to be no association between metastatic status and presence of C-ETACs.

Conclusions
CMD in the form of viable C-ETACs is a potent threat in patients with Breast cancers despite complete radiological response to treatment.

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