Detection of Potential Epithelial Mesenchymal Transition Cells in Localized Prostate Cancer

Veena Singh, Julie Mayer, Jason Alter, Deanna Fisher, and Tony J Pircher

Biocept Inc, San Diego CA

Abstract: 16826

Introduction

Circulating tumor cells (CTCs) are well characterized in advanced metastatic prostate cancer, however CTC detection and possible clinical utility in non-metastatic, localized prostate cancer (LocPca) is controversial (Maas et al.). A primary criticism of early studies evaluating CTCs in LocPca is that the majority of CTC detection was conducted via the CellSearch platform which selectively captures CTCs with an epithelial phenotype (EPCAM, CK+). Recent studies have emphasized the importance of non-traditional CTCs, such as epithelial mesenchymal transition cells in prostate as well as other cancers (ref). The Target Selector™ CTC platform can also detect cytokeratin negative (CK-) cells which are potential EMT transitional cells. We report on the rate of both traditional (CK+) and non-traditional CTCs (CK-) cells in LocPca.

Results

CTC results from deidentified clinical data was analyzed. Patients were diagnosed with non-metastatic disease and either were placed on active surveillance or had first line therapy (surgery or EBRT). (N=75) The capture antibody mixture contained anti-EpCAM (Trop-1), tumor-associated calcium signal transducer 2 (Trop-2), anti-c-MET, anti-Folate-binding protein receptor, anti-N-Cadherin, anti-CD318, and anti-mesenchymal stem cell antigen. Cells were stained with a mixture of anti-cytokeratin 17, 18, 19, pan-cytokeratin, CD45 antibody labeled with AlexaFluor-594 and DAPI III to visualize the nucleus. CTCs were captured and detected on a microchannel platform derivatized with streptavidin and mathematically designed to avoid laminar flow to maximize cell contact. CTC enumeration was performed via Olympus BX51 fluorescence microscope at 200 X magnifications and based on CK+/CD45-/DAPI+ stain criteria. The precise location of each CTC was recorded, permitting cell re-localization.

Conclusions

These results demonstrate that cytokeratin negative CTCs are detected more frequently than cytokeratin positive CTCs and represent a population that are currently not captured and considered due to the epithelial CTC focus of the leading CTC detection platform. Ongoing research will better characterize these cells as potential EMT phenotype and their association with clinical parameters.

References