Circulating Tumor Cells Isolation From Prostate Cancer Patients Using A New Microfiltration Device: Pilot Study And Potential Correlation With Psma-Pet Imagining Scan.

Abstract Submitter: Jesus Rolando Delgado Balderas, Mexico*

Co-Authors: Hugo Enrique Solis Lara, Juan Felipe Yee de Leon, Carlos Aguilar Avelar, Brenda Soto, Diana Araiz Hernandez, Miguel Esparza, Alejandro Abarca Blanco, Lauro Salvador Gomez Guerra, Guillermo Elizondo Riojas

*Universidad Autonoma de Nuevo Leon

Abstract

Background. The implementation of Circulating Tumor Cells (CTC) analysis in clinical practice is highly challenging due to the lack of automated platforms of analysis, non-scalable fabrication methods, and the prolonged processing times for each sample. We developed an automated microfiltration device (Cytocatch) composed of two independent units. The first unit allows for the efficient filtration of blood samples to separate CTC and their immunostaining; the second unit is an imaging device based on chemiluminescence that enables sample scanning and the identification of CTC through computer vision and machine learning. Positron Emission Tomography-Prostate Specific Membrane Antigen (PET-PSMA) scan has showed clinical applications in staging and response to therapy. Objectives. 1) Detect CTC from prostate cancer (PCa) patients and 2) Analyze the correlation of CTC with PSMA-PET analysis. Methods. We design a prospective and transversal clinical study; patients provide their informed consent (RA20-00005) and donated 10 mL of blood. The samples were processed using Cytocatch device and stained with anti-EpCAM, anti-panCK, anti-PSMA, and anti-CD45 antibodies. PET-PSMA scan was performed, and the Standardized Uptake Vale (SUV)MAX was quantified to detect tumor lesions. Data were analyzed using SPSS v19 software. Results. We include 19 patients; their mean age and BMI were 67.4 years and 28.9, respectively. Clinical parameters: the ISUP scale found in 84.2% of cases was > 4, prostate specific antigen (PSA) 58.1 + 4.3 ng/dL, PET-PSMA was positive in the 78.9% and allowed found metastases in 47.4% of cases. The mean of total CTC level was 14.89 + 6.29, detected in 78.9% of patients. Spearman test results found the next parameters: CTCs vs. SUVMax (r=0.155, p=.0.526), CTCs vs. PSA (r=0.299, p=0.213), CTC vs. BMI (r=-0.209, p=0.390), SUVMAX. vs. PSA (r=0.677, p=0.001). No significant difference was found in CTC levels of metastatic and non-metastatic patients. Conclusions. CTC were efficiently isolated from non-metastatic and metastatic patients.No correlation was found between CTC levels and PET-PSMA imaging test. The moderate and significant positive correlation was observed between PSA and SUVMax, as expected

Do you have any conflicts of interest?

Yes, I have a conflict of interest.

I was en employee of Delee Corp.