Early detection of metastatic breast cancer

Sharmistha Dey

Department of Biophysic1 and Department of Medical Oncology2, All India Institute of Medical Sciences, New Delhi, India

Early detection of metastatic breast cancer (MBC) is the serious issue to healthcare system. It essential to develop potential non-invasive, low-cost molecular biomarkers. The present study explored specific serum proteins of inflammatory, MAPK and cytoskeletal signaling pathways, involved in progression of MBC to establish panel of blood based diagnostic and prognostic biomarker. Healthy-control (HC), non-metastatic (NM) and metastatic (M) (pre and post-therapy) breast cancer (BC) patients were recruited. LOX5, Rac1, Rac1b, p38α, phosphop38α(Y182), LIMK1, phospho-LIMK1(T508), cofilin1 and phospho-cofilin1(S3) were quantified in the serum of study group by real time label free surface plasmon resonance technology and verified by western blot. Proteins were found to be significantly elevated in serum of BC patients compared to HC and also higher in M compared to NM which further downregulated in post-therapy M patients. Elevation of phospho-LIMK1 and phospho-cofilin1 which are critical for M were also indicated in the serum level and can differentiate from NM. Receiver operating characteristics (ROC) derived area under curve (AUC) (0.9) is very strong to differentiate between HC and BC. The panel of inflammatory cytoskeleton signaling regime proteins specified in this study can have significant clinical utility for diagnosis as well as prognosis of MBC at early stage. The study may have a high translational value in simple and cost-effective way by avoiding frequent CT/PET scans.

Biography

Prof. Sharmistha Dey is a distinguished scientist and Professor in the Department of Biophysics at the All India Institute of Medical Sciences (AIIMS), New Delhi. Her research primarily focuses on the identification and development of blood-based biomarkers for neurodegenerative diseases, such as Alzheimer's and Parkinson's, as well as various cancers, including oral and breast cancer. She is also involved in exploring therapeutic interventions using both synthetic peptides and plant-derived compounds .

sharmistha_d@hotmail.com