Study of Prostate Specific Antigen Gene Expression and Telomerase in Breast Cancer Patients

ZARGHAMI N, MD¹: Associate Professor in Clinical Biochemistry (Corresponding author)
E-mail: Zarghami@tbzmed.ac.ir
MOHAJERI A²: Student of Genetics
BAYAT A, MD³: Associate Professor in Surgery
ALANI B⁴: Research Instructor of Molecular Biology

Drug applied Research Center, Tabriz University of Medical Sciences¹, Department of surgery, Imam Khomeini Hospital, Tabriz University of Medical Sciences³, Lung and Tuberculosis Research Center, Tabriz University of Medical Sciences²,⁴

ABSTRACT

Background and objectives: Breast cancer is the most common disease in women. In the expansion and progression of breast tumors combination of tumor markers including prostate specific antigen and telomerase are engaged. The aim of this study was to evaluate relationship between telomerase activity and prostate specific antigen gene expression in breast cancer patients and controls.

Material and methods: This study was a case-control and consisted of 25 women diagnosed with breast benign tumors as control and 35 malignant tumors as cases. Telomerase activity was measured in tumor cytosol of samples by TRAP assay. PSA protein was measured using ultra sensitive immunofluorometric assay and PSA mRNA expression was making cleared using RT-PCR techniques in all tumor tissues.

Results: Using TRAP assay, presence of the telomerase activity was positive in all of the breast cancer patients. The difference of relative telomerase activity (RTA) values between stages and also all grades were more statistically significant (p<0.05). The PSA mRNA were detected only in benign tumors and stage I and grade I malignant tumor cytosols. Difference of tumor cytosol PSA levels between the cases and control groups and also between all grades and stages of diseases were significant (p <0.05). In all, there was an inverse significant correlation between the RTA and PSA protein levels in the case groups (r=-0.42, p<0.05).

Conclusion: Our results showed a reverse relationship between PSA mRNA expression and increasing telomerase gene expression during breast cancer progression and development. In all, measurement of telomerase activity could be favorable biomarker along with PSA in breast cancer diagnosis.

Key words: Prostate Specific Antigen, Telomerase, Gene Expression, Breast cancer