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Efficacy of TSHR mRNA as a tumor marker in the follow-up of differentiated thyroid cancer

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Objectives: Measurement of serum thyroglobulin (sTg) by immunoassay is used as a tumor marker for differentiated thyroid cancer (DTC); however, the possible interference of endogenous anti-thyroglobulin anti-bodies (TgAb) and low sensitivity during thyroid hormone suppression may limit its clinical usefulness. Therefore, many researchers have evaluated the efficacy of thyroid-transcripts by molecular assay instead. Here we investigated the efficacy of thyroid-stimulating hormone receptor (TSHR) mRNA during thyroid hormone suppression especially in TgAb-positive patients.

Methods: We studied 160 patients with differentiated thyroid cancer and 27 normal subjects without history of thyroid disease. All patients had undergone near-total thyroidectomy and radioactive iodine ablation. Of the 160 patients, 49 (30.6%) were classified as in-remission, 111 patients (69.4%) were disease-persistence, of which, 27 patients (24.3%) were TgAb-positive. Quantification of TSHR mRNA was performed using real-time PCR.

Results: Median TSHR mRNA level of in-remission group was significantly different from disease-persistence in TgAb-positive patients, particularly in distant metastasis patients. Analysis of TSHR mRNA at 2.00 pgEq/ μ g total RNA enabled us to discriminate between remission and disease-persistence at sensitivity of 88.9% and specificity of 42.9%. However, there is no correlation between level of TSHR mRNA and sTg or TSHR mRNA and TSH in all groups.

Conclusion: We demonstrated that TSHR mRNA has greater sensitivity in prediction of disease-persistence in TgAb-positive patients than sTg during thyroid hormone suppression. Further study should emphasize the cost-effectiveness of routine usage of the assay in clinical practice.

Biography

Surasawadee Ausavarat has completed her PhD in Human Molecular Genetics from Chulalongkorn University, Thailand. Her research interests are human disease gene identification and characterization. Currently, she is a Lecturer of Nuclear Chemistry Laboratory, Division of Nuclear Medicine and her current research is directed toward determining a molecular marker for thyroid cancer. She has published more than 7 papers in international peer journals.

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