

Transglutaminase 2 as a Potential Novel Marker for Lymph Node Metastasis and Recurrence in Papillary Thyroid Cancer

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Abstract:

Purpose: Transglutaminase 2 (TG2) is associated with mobilization, invasion, and chemoresistance of tumor cells. We aimed to determine whether the immunohistochemical staining with TG2 antibody differs between metastatic and non-metastatic papillary thyroid cancer patients.

Methods: We included 76 patients with papillary thyroid cancer (72% female, median age 52 (24-81) years, follow-up time 107 (60-216) months). Thirty of them with no metastasis, 30 of them with only lymph node metastasis and 16 patients with distant±lymph node metastasis. Immunohistochemical staining of TG2 antibody was evaluated in the primary tumor and extra-tumoral tissue. We also divided subjects into two groups according to their primary tumor TG2 staining score (group A, high risk group: ≥ 3 , n=43; group B, low risk group: < 3 , n=33).

Results: Vascular invasion ($p < 0,001$), thyroid capsule invasion ($p < 0,001$), extrathyroidal extension ($p < 0,001$), intrathyroidal dissemination ($p = 0,001$), lymph node metastasis ($p < 0,001$), presence of aggressive histology ($p < 0,001$) were significantly higher in group A. No significant difference was found between the groups in terms of distant metastasis. Based on ATA risk classification 95.5% of patients with low risk were in group B but 86.8% of intermediate risk and 56.3% of high risk were in group A. In regression analysis, lymph node metastasis increased by 1,9 times with each one point increase in TG2 staining score.

Conclusion: TG2 staining score of the primary tumor may be a predictive factor for lymph node metastasis. High or low TG2 scores may effect the frequency of follow-up and decision of treatment regimens.

Keywords:

Papillary thyroid cancer, transglutaminase 2, lymph node metastasis, risk assessment, immunohistochemical.