Poster

An affordable immunohistochemical approach to estimate BRAFV600E prevalence in large scale studies of thyroid cancer – A pilot study in Korean cohort

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Abstract

Background:

Papillary thyroid cancer (PTC) is the most common thyroid malignancy accounting for more than 80% of all thyroid cancers and the BRAFV600E mutation is found in almost half of PTC cases. Genotyping is the gold standard for detection of BRAFV600E. However, most of molecular tests are expensive and relatively time consuming. Immunohistochemistry (IHC) with VE1 antibody was found to be rapid, simple and cost effective alternative for detection of BRAFV600E. Another approach to reduce the cost is by using tissue microarrays, in which multiple tissue samples can be arrayed into a single paraffin block. We aimed to study the concordance of IHC with that of genotyping to detect the BRAFV600E in PTC.

Materials and Methods:

TMA were constructed from 224 PTC specimens collected from the Catholic University of Korea, Seoul. BRAFV600E was identified by direct sequencing. All the samples were immunostained with VE1 antibody. In addition, we correlated BRAF status with the clinical and histopathological features of PTCs.

Result:

The BRAFV600E mutation was detected in 186/224 (83%) cases of PTC by molecular testing. VE1 IHC showed 98.4% sensitivity, 97.2% specificity and positive and negative predictive values of 99.4% and 92.1%, respectively. The false positive and negative rates were 2.8% and 5.2%, respectively. BRAF mutation was associated with older age of patients and extrathyroidal extension, but not with other clinico-pathological variables (tumor size, multifocality, margin status, pT, N, and M categories).

Conclusion:

The use of VE1 IHC for the detection of BRAFV600E in PTC tissues is a clinically applicable method with high specificity, sensitivity, and positive and negative predictive values, and may represent affordable alternative for DNA-based molecular studies. In patients with PTC, BRAFV600E is associated with several adverse prognostic factors. We further aim to apply this approach to estimate BRAFV600E prevalence in Thai population.