STRESZCZENIE W JĘZYKU ANGIELSKIM

In the last decades, around the world, including Poland, there have been reports regarding increased incidence of thyroid carcinoma and in particular papillary carcinoma, its most frequent histological type. The *BRAF V600E* mutation is the most common genetic event occurring in papillary thyroid cancer (PTC). Many reports show that this mutation has a significant impact not only on the clinical course of the disease, but also on survival rate. However, there are also studies suggesting that this mutation does not contribute to the unfavorable clinical course of the papillary thyroid carcinoma. The tests based on DNA-analysis are standard methods used to detect *BRAF V600E* mutation. Recently, the possibility of using immunohistochemistry (IHC) to detect the *BRAF V600E* mutation has been reported.

This doctoral dissertation aimed to evaluate the *BRAF V600E* status in papillary carcinoma using IHC and mice monoclonal antibody (VE1 Clone) with two alternative IHC staining protocols and with molecular biology methods such as Sanger sequencing (SEQ) and real-time PCR (qPCR), as well as to compare the results obtained using different methods. An attempt was also made to correlate IHC-2 results BRAF + and the intensity of IHC-2 reaction with clinical-pathological features.

In 140 patients aged 15-76 years (mean = 51.8; median = 52) with the classic subtype of papillary carcinoma, the status of the *BRAF V600E* mutation was evaluated using IHC (with two alternative IHC-1 vs IHC-2 staining protocols, differing only in incubation times) and molecular biology methods: SEQ and qPCR.

The *BRAF V600E* mutation was detected in 57.1% (80/140) of patients by IHC-1 and 62.9% (88/140) of patients by IHC-2. The highest correlation in detecting the *BRAF V600E* mutation was found between IHC-2 and qPCR (94.2%), and between IHC-1 and qPCR (83.9%). The compatibility between: IHC-1 and SEQ, and IHC-2 and SEQ amounted to 71.5% and 76.2%, respectively. IHC-2 protocol dominated in all specs including sensitivity, PPV, and NPV, and Cohen's kappa over IHC- 1 except for specificity. The presence of *BRAF V600* mutation significantly correlated with age at the time of the diagnosis, histopathological staging and extra-thyroid infiltration The higher intensity of cell staining did not significantly correlate with any clinical and pathological features.

Some discrepancies between IHC results and molecular methods indicates that IHC cannot replace molecular tests in the detection of *BRAF V600E* mutations. The fact that false-positive and false negative results are observed makes it impossible to use IHC as an initial test for later verification with molecular methods