Oncology of the chest

Genotyping of Clinically Important EGFR Mutations from Bronchial Cytological Specimens in a Slovak Cohort

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Non-small cell lung cancer (NSCLC) is histologically and molecularly heterogeneous disease predominating in Slovakia among newly diagnosed oncological disorders and leading in numbers of associated deaths. NSCLC diagnostics has advanced especially in molecular typing of epidermal growth factor receptor (EGFR) and consequent targeted molecular therapy (TMT) using tyrosine-kinase inhibitors (TKI). Selection of patients for TMT is mostly guided through invasive biopsy or infrequently through bronchial brushings (BB) we describe in this study. In the NSCLC-BB cohort we have identified 32 adenocarcinomas, 40 squamous-cell carcinomas, 12 large-cell carcinomas and 2 not-otherwise-specified carcinomas. Assessment of cellularity, tumor cell content and genomic DNA allowed for screening of clinically relevant somatic EGFR mutations in 86 patients. Using quantitative PCR, 12 patients (13,95%) were recommended for EGFR-TKI therapy. The most prevalent EGFR HIT-a in the somatosome, terms introduced and defined in this study, were exon 19 deletions, whereas in one patient they were found in combination with the TKI resistant p.T790M mutation in exon 20. In this study we describe a method that is minimally invasive, reliable and meets all criteria of routine molecular diagnostics. Implemented multidisciplinary approach of EGFR genotyping from BB allows for expansion of the Slovak biopsied NSCLC patient´s cohort to TMT.

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