MAGE-A3 and PRAME Gene Expression and EGFR Mutation Status in Non-Small-Cell Lung Cancer

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Abstract : Background: The RNA-expression levels of cancer-testis antigens MAGE A3 and PRAME were determined in resected tissue from patients with primary non-small-cell lung cancer (NSCLC) and related to clinical outcome. EGFR, KRAS and BRAF mutation status was determined in a subset to investigate associations with MAGE A3 and PRAME expression. Methods: We conducted a single-centre, uncontrolled, retrospective study of 1260 tissue-bank samples from stage IA-III resected NSCLC. The prognostic value of antigen expression (qRT-PCR) was determined by hazard-ratio and Kaplan-Meier curves. Results: Thirty-seven percent (314/844) of tumours expressed MAGE-A3, 66% (723/1092) expressed PRAME and 31% (239/839) expressed both. Respective frequencies in squamous-cell tumours and adenocarcinomas were 43%/30% for MAGE A3 and 80%/44% for PRAME. No correlation with stage, tumour size or patient age was found. Overall, no prognostic value was identified for either antigen. A trend to poorer overall survival was associated with MAGE-A3 in stage IIIB and with PRAME in stage IB. EGFR and KRAS mutations were found in 10.1% (28/311) and 33.8% (97/311) of tumours, respectively. EGFR (but not KRAS) mutation status was negatively associated with PRAME expression. Conclusion: No clear prognostic value for either PRAME or MAGE A3 was observed in the overall population, although some observed trends may warrant further investigation.

Keywords : MAGE A3, PRAME, cancer-testis gene, NSCLC, survival, EGFR
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