

Immunopositivity of heat shock protein 60 as a biomarker of bronchial carcinogenesis

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According to WHO classification, preneoplastic lesions of lung cancer include several histological types: basal-cell hyperplasia; squamous metaplasia; mild to severe dysplasia; and bronchial-cell carcinoma. Heat shock protein 60 (HSP60) is a predictive molecular marker in several neoplasms, and is overexpressed during the carcinogenic steps of cancers of the colon, prostate, and uterus. By contrast, loss of HSP60 immunopositivity could have prognostic relevance in patients with bladder carcinoma. We obtained bronchial biopsy samples from 46 consecutive patients with a history of smoking (mean 49 packs per year [SD 34]) who had chronic obstructive pulmonary disease (mean postbronchodilator forced expiratory volume in 1 s of 57% [22]). Ten of 46 samples showed healthy bronchial epithelium, whereas 12 samples showed basal-cell hyperplasia, 14 squamous metaplasia, and ten mild to severe dysplasia. We used mouse HSP60 monoclonal antibody in the DAKO LSAB2 peroxidase system to do an immunohistochemical analysis of all samples. In samples that tested positive for HSP60, mean epithelial expression was 60% (5) in healthy bronchial cells (figure A, n=10) and 60% (10) in basal-cell hyperplasia (figure B, n=11). By contrast, mean expression was 7% (5) in squamous metaplasia (figure C, n=2), and no expression was recorded for samples of dysplasia (not shown) and basal-cell carcinoma (figure D, n=10). Healthy bronchial epithelia are present at the edges of samples of basal-cell carcinoma and were negative for HSP60 expression (figure D, right). Compared with healthy individuals and patients with asthma, smokers with established chronic obstructive pulmonary disease are at increased risk of developing lung cancer. In view of these data, we postulate that the loss of HSP60 immunopositivity could be related to development and progression of bronchial cancer, and could be a useful diagnostic and prognostic tool in the management of this disease.

Conflict of interest

We declare no conflicts of interest.

