Abstract

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Pathology of non-small cell lung cancer. New diagnostic approaches.

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Author information

Abstract

Non-small cell lung cancers (NSCLC) comprise 75% of all lung cancers and consist of three major histologic types: squamous cell carcinoma, adenocarcinoma, and large cell carcinoma. The histopathology of lung cancer appears to be changing: The incidence of squamous cell carcinoma in the United States is declining, accompanied by the increase in the incidence of adenocarcinoma. Carcinoma of the lung is thought to arise from a pluripotent epithelial cell capable of expressing a variety of phenotypes. Malignant transformation is the end result of multiple events involving the growth control of bronchopulmonary epithelium. It is well known that squamous cell carcinomas are preceded by many years of progressive mucosal changes including squamous metaplasia, dysplasia, and carcinoma in situ. Premalignant changes associated with the other types of NSCLC are less well understood. Recently characterized markers for peripheral airway cell differentiation and selected monoclonal antibodies may be helpful. It is conceivable to identify specific genetic events at the cellular level using in situ hybridization or polymerase chain reaction. Biologic and genetic studies have renewed the awareness of the pleomorphism of NSCLC. Potentially interesting subsets include the following: (1) The expression of neuroendocrine (NE) markers has been demonstrated in selected NSCLC (NSCLC-NE), mostly in adeno- and large cell carcinomas. (2) The presence of K-ras mutations in surgically resected adenocarcinomas has been associated with shortened survival times. (3) Also, the neu gene encoded protein p185 has been associated with a more aggressive clinical course in adenocarcinomas. Further studies are needed to confirm such results and correlate the findings with the current WHO NSCLC classification. Rapid validation of relevant new diagnostic approaches is an enormous challenge. Although selected immunohistochemical and molecular biologic techniques may work on routinely processed paraffin-embedded material obtained from the pathology archives, many of the newest applications require fresh or freshly frozen specimens from large numbers of patients with a computerized clinical data base for adequate clinicopathologic correlations. Establishing such a resource is obviously a team effort requiring close collaboration of the oncologist, pathologist, surgeon, and technicians.

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