

Research explores lung cancer among pediatric cancer patients

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Because primary lung adenocarcinoma is exceedingly rare in the pediatric population, it is difficult to properly classify certain lung tumors in children and adolescents. While anecdotal reports of pediatric patients with lung cancer lesions exist, little research has been conducted to link the disease in children to similar pulmonary malignancies in adults. Through an assessment of clinical, tissue-based and molecular data for pediatric lung cancer, research published in the November edition of the *Journal of Thoracic Oncology* determined that pulmonary lesions found in young patients with pediatric cancers can be histologically indistinguishable from lung adenocarcinoma seen in adults. Findings indicate that lung adenocarcinomas could occur prior to chemotherapy treatment for a second cancer, and some tumors display gene mutations in EGFR and KRAS – this is the first documentation of these mutations in pediatric adenocarcinoma.

Until now, it had seemed reasonable to consider these rare pulmonary tumors as secondary malignancies in children, caused by treatment for other cancers. In this newly published study (the largest study of its kind), however, the tumors of eight patients between the age of 10 and 24 years, all never smokers, were evaluated in terms of histopathologic and molecular data.

Researchers determined that these tumors are (1) adenocarcinomas ranging from bronchioloalveolar carcinoma (BAC), or adenocarcinoma in situ (AIS), to invasive histologic patterns and (2) may be present before administration of [chemotherapy](#) for the underlying malignancy,

and therefore are not always or necessarily secondary malignancies, as had been previously believed. This study clearly documents the invasive patterns of lung cancer in pediatric cancer patients and suggests that the simultaneous presence of a primary malignancy and pulmonary adenocarcinoma may reflect more than coincidence.

"In the past, because of the unusually young age, we were reluctant to call such tumors 'BAC' and instead qualified these cases as 'BAC-like nodule,'" explained lead investigator, Dr. Marc Ladanyi of Memorial Sloan-Kettering Cancer Center. "Our findings now confirm the presence of EGFR and KRAS mutations in some of these pediatric lung cancers in a proportion similar to lung cancers seen in adults, which allows us to more confidently propose that this is genuine [lung cancer](#) in the pediatric population. The clinical course of these lung adenocarcinomas in children remains unclear because all 8 patients had their lung tumors fully removed without subsequent recurrence. This may reflect the fact that half of the patients had AIS, which is now recognized to have a 100 percent disease free survival for completely resected cases. An open question is whether these lung adenocarcinomas are increasing in the pediatric age group or is this due to a detection bias due to more detailed lung imaging in patients with common, non-pulmonary, childhood cancers."

More information: journals.lww.com/jto

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