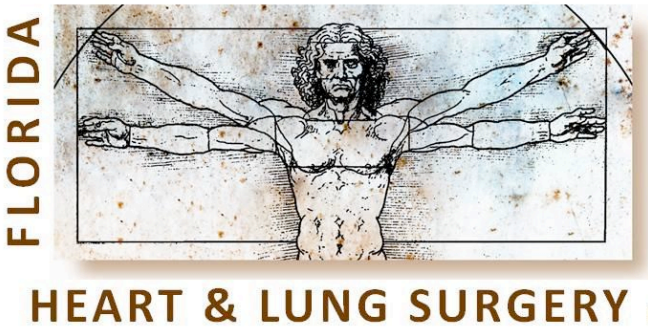
Review of Thoracic Surgical Oncology



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Lung cancer pathology

Pathologic subtypes of stage IIIA adenocarcinomas have different survival

J Thorac Oncol. 2013 Apr;8(4):461-8. Correlation of mutation status and survival with predominant histologic subtype according to the new IASLC/ATS/ERS lung adenocarcinoma classification in stage III (N2) patients. Russell PA, Barnett SA, Walkiewicz M, Wainer Z, Conron M, Wright GM, Gooi J, Knight S, Wynne R, Liew D, John T. Department of Anatomical Pathology, St Vincent's Hospital, The University of Melbourne, Melbourne, Australia. INTRODUCTION: We investigated the relationship between predominant subtype, according to the International Association for the Study of Lung Cancer/American Thoracic Society/European Respiratory Society International Multidisciplinary Lung Adenocarcinoma Classification; mutation status; and patient outcome in stage III (N2) lung adenocarcinoma. METHODS: We identified 69 patients with stage III (N2) lung adenocarcinoma operated on with curative intent between 1993 and 2011 who had adequate tumor tissue for molecular analysis and adequate follow-up time for survival analysis. DNA was isolated and tested for mutations using Sequenom's OncoCarta Panel (v1.0; Sequenom, San Diego, CA). RESULTS: The majority of tumors were acinar (26 of 69 tumors; 38%), solid (24 of 69 tumors; 35%), and micropapillary predominant (13 of 69 tumors; 19%) subtypes. EGFR and KRAS mutations were identified in 17 of 59 tumors (29%) and 13 of 59 tumors (22%), respectively. EGFR mutations occurred most often in acinar (11 of 25 tumors; 44%) and micropapillary predominant tumors (five of 13 tumors; 38%) (p = 0.009), whereas KRAS mutations occurred most often in solid predominant tumors (nine of 21 tumors; 43%) (p = 0.016). Patients with acinar predominant tumors had significantly improved overall survival compared with those with non-acinar predominant tumors (hazard ratio: 0.45; 95% confidence interval: 0.22-0.91; p = 0.026), which remained significant after adjustment for EGFR status, T-stage, sex, and age. Patients with EGFR-mutant micropapillary predominant tumors had similar survival to those with EGFR-mutant acinar predominant tumors. The predominant subtype in the primary tumor was most often seen in the N2 node in micropapillary and solid predominant tumors but not in acinar predominant tumors. CONCLUSIONS: The predominant subtype in the primary tumor was associated with overall survival in resected stage III (N2) lung adenocarcinoma and was independent of mutation status. Histologic subtyping provides important prognostic information and potentially molecular correlates. and su

Editor's commentary: It is becoming increasingly clear that the descriptor "adenocarcinoma" in NSCLC includes a variety of differing subtypes with differing prognosis. In this retrospective review of 69 patients with N2 IIIA patients following resection, acinar subtype tumors had significantly better prognosis while solid, micropapillary, colloid (aka mucinous), and papillary subtypes had worse prognosis. These results were found to be independent of biomarker status. The numbers are small but still significant, which speaks to the strength of the results. Over the past year, several studies are showing roughly the same results: in situ, minimally invasive, and lepidic growth tumors have excellent prognosis, and solid tumors have the worst. Acinar, micropapillary, and papillary are intermediate in prognosis or inconsistently correlated in prognosis.

Lung cancer staging

Lymph node ratio gains more ground as staging tool

J Thorac Oncol. 2013 Apr;8(4):429-35. The prognostic value of ratio-based lymph node staging in resected non-small-cell lung cancer. Qiu C, Dong W, Su B, Liu Q, Du J. Institute of Oncology, Provincial Hospital Affiliated to Shandong University, Shandong University, Jinan 250021, P R China. INTRODUCTION: Assessment of lymph node status is a critical issue in the surgical management of non-small-cell lung cancer (NSCLC). We sought to determine the prognostic value of metastatic lymph node ratio (LNR) in patients with radical surgery for NSCLC. METHODS: We abstracted data from 480 consecutive patients undergoing radical surgery for NSCLC between 2006 and 2008 in our institution. Kaplan-Meier estimated the survival function using the number of metastatic lymph node (MLN) and LNR as categorized variables. The prognostic value of age, sex, smoking status, location of tumor, histology, pathology T stage, pathology N stage, surgical procedure, chemotherapy, MLN, and LNR were assessed using a multivariate Cox proportional hazards model for overall survival (OS) and disease-free survival (DFS). RESULTS: The median numbers of examined lymph nodes and MLNs were 15 and 5, respectively. Optimal cutpoints of the LNR were calculated as 0, 0 to 0.35, and greater than 0.35. Patients with higher LNR were associated with worse OS and DFS in the whole series, whereas there was no significant difference in the OS and DFS of those patients classified as pathology N2. A multivariate analysis showed that the LNR staging, smoking status, and chemotherapy were revealed to be independent prognostic factors. CONCLUSIONS: LNR is an independent predictor of survival in patients with NSCLC undergoing radical resection; the prognostic significance is more valuable in patients classified as pathology N1.

Editor's commentary: Lymph node numbers and ratios are proving to be better prognostic predictors than traditional location identifiers in thoracic malignancy. The NCCN and AJCC guidelines are now based on number of positive lymph nodes in esophageal cancer. This report adds to the list of papers in lung cancer showing improved prediction by either **number** of positive lymph nodes or the **ratio** of positive to total nodes retrieved.

Lung cancer surgery

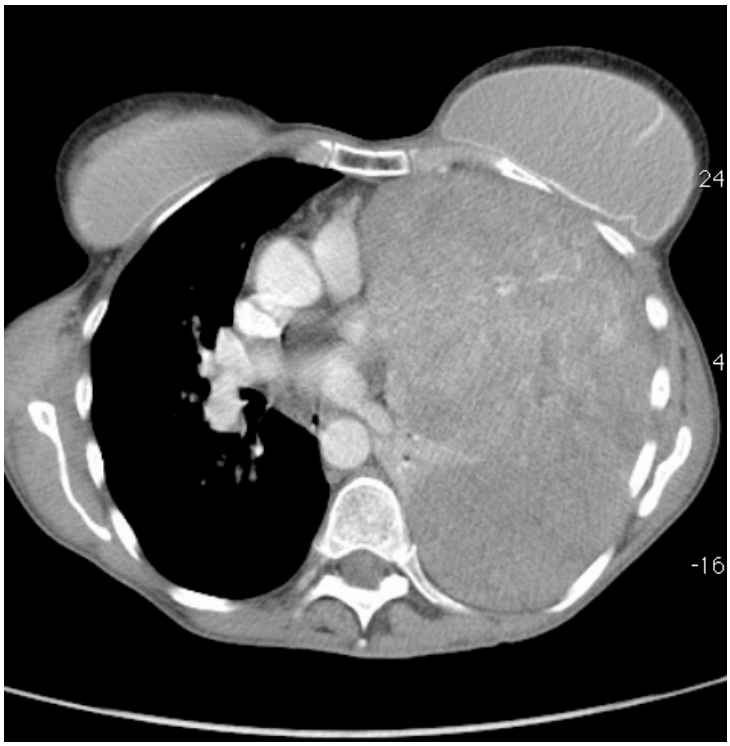
Risks of lung cancer surgery following coronary stenting within one year

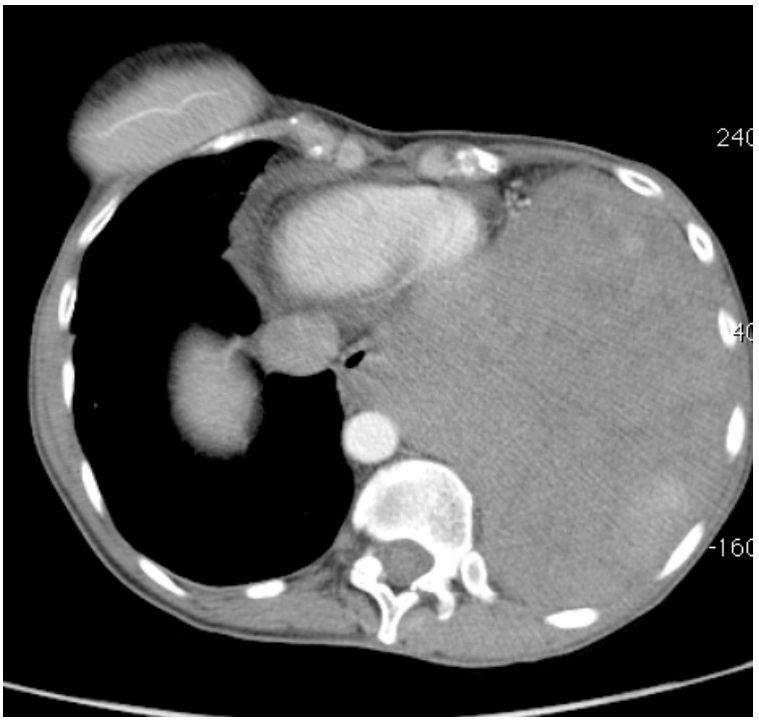
Ann Thorac Surg. 2013 Apr;95(4):1212-20. 2013 Mar 5. Incremental risk of prior coronary arterial stents for pulmonary resection. Fernandez FG, Crabtree TD, Liu J, Meyers BF. Section of General Thoracic Surgery, Emory University School of Medicine, Atlanta, Georgia.. BACKGROUND: Many patients requiring lung cancer resection have concomitant coronary artery disease. Preoperative coronary artery stenting has been associated with increased risk of cardiac events after noncardiac surgery. Our aim was to determine the incidence of major adverse cardiac events (MACE) in patients undergoing pulmonary resection for lung cancer after percutaneous coronary stenting. METHODS: This study uses Surveillance, Epidemiology, and End Results-Medicare data (1998 to 2005). Patients undergoing lung cancer resection within 1 year after coronary stenting were compared with patients without preoperative coronary intervention. The incidence and predictors of MACE within 30 days after surgery were determined. RESULTS: Five hundred nineteen patients underwent lung cancer resection after coronary stenting (stent), and 21,892 patients underwent lung cancer resection without a preceding coronary intervention (no stent). The stent group had higher comorbidity scores ($p < 0.0001$) and more males (66% versus 50%; $p < 0.0001$). There were no differences in age (74 versus 74 years), tumor size (33.7 versus 33.6 mm), stage (53% versus 54% stage I), and resections of lobectomy or greater (83% versus 80%) between stent and no-stent groups (all $p > 0.05$). Thirty-day MACE and mortality rates were 9.3% and 7.7% in the stent group and 4.9% and 4.6% in the no-stent group (both $p < 0.0001$). Multivariable predictors of MACE were coronary stent, age, male sex, comorbidity score, tumor size, and stage. CONCLUSIONS: Patients undergoing lung cancer surgery within 1 year of coronary stenting are at high risk for perioperative MACE. The presence of a coronary stent should be an important component of risk assessment before resection for lung cancer.

Editor's commentary: This is a report of 519 patients culled from the SEER database from 1998-2005 who underwent lung cancer surgery one year or less after receiving a coronary stent. They were compared to over 21,000 patients who did not have stenting. The two groups were remarkably similar overall in terms of demographics and lung cancer staging. Risks of postoperative mortality was higher in the stented group--not surprisingly. Non-stented patients had a mortality risk of 4.6% vs stented patients whose risk was 7.7%. In my opinion, both of these numbers seem high but 7.7% is almost 1 out of 13. This makes me suspect of the generalizability of these results. Remember that the SEER database is dominated by general surgeons and cardiac surgeons moonlighting as thoracic surgeons and, therefore, the majority of these operations were not done by surgeons specializing in thoracic oncology.

Interesting case presentation: solitary fibrous tumor

A 61 yo WF presented with symptoms of cough, weight loss and chest pressure to her local ER. A CXR was found to be abnormal and a CT scan obtained which is shown below. A biopsy was obtained locally which confirmed the diagnosis of solitary fibrous tumor. She was taken to the OR where left thoracotomy showed a massive tumor occupying most of the left chest and displacing the mediastinum rightward, and the diaphragm inferiorly. Dissection showed that the mass was comprised of two separate masses one originating from the diaphragm and one attached to the lingula. She made an uneventful recovery and returned to her employment as a school bus driver. Final pathology confirmed a solitary fibrous tumor without pleomorphism, necrosis or significant mitoses. Solitary fibrous tumors are rare and usually considered benign. Up to 10% have features of overt malignancy and patients will rarely die of metastatic disease. There is a substantial recurrence rate, so for both of these reasons, these patients should be followed long term.





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