U.S. Department of Veterans Affairs
Public Access Author manuscript
JAMA Surg. Author manuscript; available in PMC 2016 February 18.

Published in final edited form as:
JAMA Surg. 2016 February 1; 151(2): 193–194. doi:10.1001/jamasurg.2015.3253.

A successful institutional strategy to increase therapeutic operations in patients with lung lesions

Amelia W. Maiga, MD, MPH[1], **Stephen A. Deppen, PhD**[1], **Rhonda Pinkerman, ACNP**[2], and **Eric L. Grogan, MD, MPH**[1]

[1]Vanderbilt University Medical Center, Nashville, TN

[2]Tennessee Valley Healthcare System, Nashville, TN

To the Editor

Pulmonary resection is a diagnostic and therapeutic strategy for patients with known or suspected lung cancer. Surgeons must strike a balance between resecting early-stage cancer and improving survival, while minimizing the removal of benign lesions and the low, but finite risk of resection. Overall benign rates or non-therapeutic resections surpass 20% in recent large cooperative trials but may vary between institutions depending on underlying population risk, referral patterns, and clinician risk aversion.[1–2] Institutional strategies including multidisciplinary conferences with surgical, pulmonary, radiology, pathology, and oncology participation may minimize benign rates and increase therapeutic resections.

Methods

We retrospectively examined all patients who underwent pulmonary resection for known or suspected lung cancer from 2005–2013 from a single tertiary referral hospital with capitated institutional resources and a high patient acuity level. Institutional review board approval was obtained prior to data collection from the Tennessee Valley Healthcare System. A strategy to increase the therapeutic operations and reduce futile thoracotomies was initiated and included patient presentation at a multidisciplinary chest conference prior to obtaining a cancer diagnosis. Demographics, imaging, diagnostic modality, pathology, type of resection, and inclusion in chest conference prior to operative resection were reviewed. Benign disease or cancer was the primary outcome and determined pathologically.

Results

There were 220 patients included in the study and the demographics are listed in table 1. The overall benign disease proportion was 6.8% (15 of 220) and 81% of patients were presented at chest conference prior to an operation. Two-thirds of patients had a known diagnosis of cancer prior to their planned therapeutic resection. The preoperative diagnostic method was

Corresponding Author/Request for Reprints: Eric L. Grogan, M.D., M.P.H. F.A.C.S., Department of Thoracic Surgery, 609 Oxford House, 1313 21st Ave. South, Nashville, TN 37232 Phone: 615-322-0064, Fax: 615-343-9194, eric.grogan@vanderbilt.edu.

None of the authors had any conflicts of interest.

Presented at the 2015 Association of VA Surgeons Annual Meeting

VA Author Manuscript
VA Author Manuscript
VA Author Manuscript

VA Author Manuscript VA Author Manuscript VA Author Manuscript

predominantly CT-guided fine needle aspiration (FNA), followed by bronchoscopy with bronchial washings or trans-bronchial needle aspiration (TBNA) (Table 1). One patient was diagnosed from an endobronchial ultrasound (EBUS) biopsy. Surgical resection was required to obtain a diagnosis in the 35% of patients with indeterminate lesions. In the 158 patients with FDG-PET scans, 94% had avid lesions. Patients without a preoperative diagnosis of malignancy, presented at multidisciplinary chest conference, had a 20% benign rate and those not presented had a 16% benign rate. The majority of patients with cancer were pathologic stage I (58%) or II (29%).

Discussion

In this retrospective case series, the non-therapeutic resection proportion was 6.8%, the lowest reported in contemporary literature.[1–3] Limitations of this study include its retrospective, observational nature and our inability to prove causality between the use of a preoperative case conference and the low benign disease proportion. Multidisciplinary review may lead to more comprehensive implementation of diagnostic modalities that better identify patients most likely to benefit from therapeutic resection. Recent data suggest that tumor board engagement by physicians caring for oncology patients results in higher rates of curative-intent surgery for early stage non-small cell lung cancer.[4] Due to the limited scope of this study the impact on stage migration or survival was not evaluated.

In light of the National Lung Screening Trial (NLST) and the eight million individuals at risk, an estimated 3.1 million lung abnormalities will be identified in the first three years of a national CT screening program.[1,5] Assuming a benign operative rate exceeding 20%, at least 24,000 operations in the first three years would be performed for benign disease. Reducing benign rates will ease the cost and prevent unnecessary morbidity and mortality resulting from evaluating the lesions found during lung cancer screening. The benign disease rate has recently been proposed as a quality metric for the management of indeterminate lung lesions.[3] Implementation of a preoperative multidisciplinary review may help to better target institutional resources while minimizing the potential harm caused by invasive diagnostic and therapeutic techniques.

Acknowledgments

Dr. Grogan is a recipient of the Department of Veterans Affairs, Veterans Health Administration, Health Services Research and Development Service Career Development Award (10–024). The views expressed in this article are those of the authors and do not necessarily represent the views of the Department of Veterans Affairs. The funding agency had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; the preparation, review, or approval of the manuscript; or in the decision to submit the manuscript for publication.

This work was presented at the 39th annual meeting of the Association of VA Surgeons (AVAS) on May 3, 2015. The authors declare that they have no conflicts of interest. AWM and SD had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

References

1. National Lung Screening Trial Research Team. Aberle DR, Adams AM, et al. Reduced Lung-Cancer Mortality with Low-Dose Computed Tomographic Screening. New England Journal of Medicine. 2011; 365:395–409. [PubMed: 21714641]

VA Author Manuscript

VA Author Manuscript

VA Author Manuscript

2. Deppen SA, Blume JD, Aldrich MC, et al. Predicting Lung Cancer Prior to Surgical Resection in Patients with Lung Nodules. Journal of Thoracic Oncology. 2014 Oct; 9(10):1477–84. [PubMed: 25170644]

3. Carillo GA, Vazquez JE, Villar AF. Prevalence of benign pulmonary lesions excised for suspicion of malignancy: could it reflect a quality management index of indeterminate lung lesions? Korean J Thorac Cardiovasc Surg. 2014 Oct; 47(5):458–64. [PubMed: 25346901]

4. Kehl KL, Landrum MB, Kahn KL, et al. Tumor Board Participation Among Physicians Caring for Patients with Lung or Colon Cancer. J Oncol Pract. 2015 Apr 28. [Epub ahead of print].

5. Tobacco Use Supplement from Current Population Survey. 2010. (Accessed 05/01/2015 at http://riskfactor.cancer.gov/studies/tus-cps/info.html)

VA Author Manuscript

VA Author Manuscript

VA Author Manuscript

Table 1

Patient Characteristics

Benign Disease Rate (%)	**6.8**
Preoperative Presentation at Chest Conference (%)	81
Age (mean in years)	65
Male (%)	97
Caucasian (%)	83
Any Smoking History (%)	94
Pack-Years among smokers (mean)	65
BMI (mean)	25.9
FEV_1 (mean, percent of predicted)	72
Lesion size (mm), pre-operative mean	29
FDG-PET avidity (%)*	94
Preoperative cancer diagnosis (%)	66
Diagnostic modality n (%)	
FNA	101 (47%)
BAL	29 (13%)
TBNA	10 (5%)
EBUS	1 (0.5%)
Resection	75 (35%)
Pathological Stage n (%)	
Stage IA and IB	116 (58%)
Stage IIA and IIB	57 (29%)
Stage III/IV	26 (13%)

*n = 158 for patients who underwent PET imaging prior to surgery; n = 220 for the overall patient population