

Subcarinal Lymph Nodes Should be Dissected in All Lobectomies for Non-Small Cell Lung Cancer—Regardless of Primary Tumor Location

Jens Eckardt, MD, Erik Jakobsen, MPM, MD, and Peter B Licht, PhD, MD

Department of Cardiothoracic Surgery, Odense University Hospital, Odense, Denmark

Background. Mediastinal staging is of paramount importance for planning of treatment in non-small cell lung cancer (NSCLC). Single institution reports recently claimed that subcarinal lymph node dissection during resection of upper lobe NSCLC could be spared. We used a complete national lung cancer registry to investigate patterns of unsuspected mediastinal lymph node involvement after lobectomy.

Methods. During an 11-year period (2004 to 2014) 5,577 consecutive patients who underwent operations for NSCLC were investigated for unsuspected mediastinal lymph node involvement (N2 disease) discovered at final histopathology. The analysis excluded patients with clinical N2 disease. We used a national registry to extract information for each patient about tumor location, histopathology, clinical and pathologic TNM stage, preoperative imaging modalities, and type of invasive mediastinal staging.

Results. Mediastinal lymph node dissection was performed in 5,577 patients during the operation, and

unsuspected N2 disease was discovered in 612 (11.0%), and 193 (3.5%) had subcarinal metastasis. Subcarinal N2 disease was significantly more common in patients with lower-lobe or middle-lobe cancers compared with upper-lobe cancers (5.8% vs 1.6%, $p < 0.01$). Preoperative invasive mediastinal staging was performed in 73.4% (4,097 of 5,577) of all patients and significantly more frequently in patients who eventually had N2 disease (87.3% [534 of 612], $p < 0.01$) as well subcarinal N2 disease (89.6% [173 of 193], $p < 0.01$).

Conclusions. Subcarinal lymph node metastases were common despite frequent use of preoperative invasive mediastinal staging in lower-lobe, middle-lobe, and upper-lobe NSCLC. Subcarinal lymph nodes should be dissected or sampled routinely during operations for NSCLC to avoid understaging—regardless of preoperative invasive mediastinal staging and tumor location.

(Ann Thorac Surg 2016;■:■–■)

© 2016 by The Society of Thoracic Surgeons

A key pathway of non-small cell lung cancer (NSCLC) spread is through the hilar and mediastinal lymph nodes [1, 2]. Preoperative assessment of mediastinal lymph node involvement (N staging) is therefore of paramount importance for accurate clinical staging and subsequent planning of a correct treatment strategy for optimal prognosis [3–5]. According to the European Society of Thoracic Surgery and American College of Chest Physicians guidelines, all patients scheduled for resection of NSCLC should undergo preoperative mediastinal staging, with the possible exception of peripheral T1 lung cancers [6, 7].

Unsuspected mediastinal lymph node involvement is found in approximately 10% of patients who undergo surgical resection for NSCLC [8, 9], and for that reason,

the American College of Chest Physicians guidelines recommend perioperative dissection or sampling of mediastinal lymph nodes for proper pathologic staging [10]. Furthermore, the American College of Chest Physicians guidelines recommend systematic sampling or dissection of subcarinal mediastinal lymph nodes station 7 in all patients [10].

Some studies, however, suggest that subcarinal lymph node dissection could be spared in primary upper-lobe cancers because they found a low incidence of subcarinal metastases, particularly in T1 tumors [11–14]. These were all single-institution case series and, consequently, may suffer from selection bias. A complete national lung cancer registry is available in Denmark that holds information on every patient diagnosed with lung cancer in the entire country [15]. We decided to use this registry to investigate patterns of unsuspected mediastinal lymph node involvement after lobectomy for NSCLC.

Material and Methods

The Danish Lung Cancer Registry (DLCR) [15] is a nationwide registry that systematically collects clinical,

Accepted for publication Sept 29, 2016.

Presented at the Sixteenth Annual World Conference on Lung Cancer, Denver, CO, Sept 6–9, 2015.

Address correspondence to Dr Eckardt, Department of Cardiothoracic Surgery, Odense University Hospital, Søndre Blvd 29, DK-5000 Odense, Denmark; email: jens.eckardt@rsyd.dk.

surgical, and pathologic information on every lung cancer patient in Denmark. We used this registry to retrieve all patients who underwent lobectomy for NSCLC during an 11-year period (2004 to 2014) and investigated those in whom unsuspected mediastinal lymph node involvement (N2 disease) was discovered at the final histopathologic examination of surgical specimens.

All invasive staging procedures were performed as separate procedures 1 to 3 weeks before the operation with biopsies from lymph node stations 4R, 4L, 7, and less frequently at the surgeon's discretion, station 2R and 2L according to the classification of Mountain and Dresler [16]. All biopsy specimens were sent for histopathologic examination, and patients with N2 involvement were never considered for lobectomy according to national guidelines but were referred for oncologic treatment exclusively.

Patients underwent endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) or mediastinoscopy, depending on the preference of the referring departments, but patients with mediastinal lymph nodes positive on positron emission tomography (PET) and a negative EBUS-TBNA underwent a supplementary mediastinoscopy to exclude mediastinal metastases before lobectomy.

For each patient we extracted information on the histopathologic subtype of their primary cancer and their clinical and pathologic T, N, and M stage. We also recorded the anatomic location of the tumor and information on preoperative evaluations, including use of computed tomography (CT), PET, and any type of invasive mediastinal staging procedures, which changed dramatically during the study period. Before 2006 mediastinoscopy was used exclusively if mediastinal lymph nodes were larger than 10 mm on the short-axis CT scan. After 2006 mediastinoscopy was gradually replaced by EBUS-TBNA, which was performed in all patients regardless of CT findings. From 2007 PET-CT was introduced and used routinely in addition to invasive mediastinal staging in all patients with NSCLC. According to national guidelines [6, 7], all patients must undergo invasive mediastinal staging by EBUS-TBNA except in peripheral T1a tumors where the mediastinum is PET-CT negative, but most of these patients still undergo EBUS-TBNA before resection.

Regardless of preoperative findings, all patients with NSCLC who underwent resection routinely underwent intraoperative exploration, sampling, or dissection of mediastinal lymph node stations 2, 4, 7, 8, and 9 on the right side and stations 5, 6, 7, 8, and 9 on the left side according to European Society of Thoracic Surgery guidelines [6]. Mediastinal lymph nodes stations were categorized according to the classification of Mountain and Dressler [16]. All resected specimens were examined by histopathology, but the actual number of lymph nodes resected was not captured in the database. Instead, in accordance with the national guideline, it was assumed that all lymph node stations were cleared of visible lymph node tissue during the operations, which were always performed by dedicated general thoracic surgeons.

Statistic analysis of registry data included general principles for comparison of proportions in two independent groups with a *z* test and 95% confidence level.

Results

During the 11-year study period, 5,577 patients underwent lobectomy for NSCLC. We excluded 605 patients (10.8%) from the analysis because of missing registry data on the location of the primary tumor, but all data were complete for the remaining patients. As reported in Table 1, 1,669 cancers (30%) were located in the right upper lobe, followed by 1,366 (24.5%) in the left upper lobe. Less frequent were cancers in the middle lobe (256 [4.6%]), the right lower lobe (911 [16.3%]), and the left lower lobe (770 [13.8%]).

The final histopathologic examination of resected specimens revealed unexpected mediastinal lymph node metastases in 612 patients (11.0%) and metastasis in lymph node station 7 in 193 patients (3.5%). The location of the primary tumor for these patients is reported in Table 1. The histopathologic assessment is listed in Table 2, which also demonstrates that 49% of cancers with unsuspected N2 disease were adenocarcinomas and that this was not significantly different in patients with unsuspected spread to the subcarinal station (51.9%; *p* = 0.49). Likewise, squamous cell carcinomas accounted for 23.1% in patients with subcarinal metastases and for 18.3% of all patients with N2 disease (*p* = 0.15). For all patients with N2 disease and for patients with subcarinal

Table 1. Location of Primary Lung Cancer and Incidence of Unsuspected Mediastinal Lymph Node Spread

Tumor Location	All Patients No. (%)	Patients With N2 Disease No. (%)	Patients With Disease in Station 7 No. (%)
Upper lobe			
Right	1,669 (30)	146 (8.7)	30 (1.8)
Left	1,366 (24.5)	139 (10.2)	17 (1.2)
Lower lobe			
Right	911 (16.3)	93 (10.2)	62 (6.8)
Left	770 (13.8)	72 (9.4)	37 (4.8)
Middle lobe	256 (4.6)	18 (7.0)	13 (5.1)
Missing location	605 (10.8)	144	34
Total	5,577 (100)	612	193

Download English Version:

<https://daneshyari.com/en/article/5597443>

Download Persian Version:

<https://daneshyari.com/article/5597443>

[Daneshyari.com](https://daneshyari.com)