

Non—small-cell Lung Cancer With Brain Metastasis at Presentation

Saiama N. Waqar,¹ Pamela P. Samson,² Cliff G. Robinson,² Jeffrey Bradley,² Siddhartha Devarakonda,¹ Lingling Du,¹ Ramaswamy Govindan,¹ Feng Gao,³ Varun Puri,⁴ Daniel Morgensztern¹

Abstract

Data on prevalence of brain metastases at presentation in patients with non—small-cell lung cancer are limited. We queried the National Cancer Data Base to determine prevalence, risk factors and outcomes of patients with non—small-cell lung cancer, presenting with brain metastases. Brain metastases were observed in 10.4% of patients, with median survival of 6 months. Risk of brain metastases at presentation may be calculated using 5 clinical variables.

Background: Data on the prevalence of brain metastases at presentation in patients with non—small-cell lung cancer (NSCLC) are limited. We queried the National Cancer Data Base to determine prevalence, clinical risk factors, and outcomes of patients with NSCLC presenting with brain metastases. **Patients and Methods:** Patients with NSCLC diagnosed between 2010 and 2012 were identified using the National Cancer Data Base. The risk of brain metastases for individual variables was summarized by odds ratios and calculated using logistic regression analysis. The Kaplan-Meier product limit method was used to calculate the median and 1-, 2-, and 3-year overall survival (OS). **Results:** Brain metastases were observed in 47,546 (10.4%) of the 457,481 patients with NSCLC overall. The prevalence of brain metastases was much higher (26%) in patients with stage IV disease at presentation. On multivariate analysis, younger age, adenocarcinoma or large cell histology, tumor size > 3 cm, tumor grade \geq II, and node-positive disease were associated with brain metastases. The prevalence of brain metastases ranged from as low as 0.57% in patients with only 1 risk factor to as high as 22% in patients with all 5 risk factors. The median and 1-, 2-, and 3-year OS for patients with brain metastases were 6 months and 29.9%, 14.3%, and 8.4%, respectively, with the 3-year OS increasing to 36.2% in those with T1/2 and N0/1 undergoing surgery for the primary site. **Conclusions:** In patients with NSCLC, the risk of brain metastases at presentation may be calculated based on 5 clinical variables. Selected patients with brain metastases at presentation may achieve prolonged benefit.

Clinical Lung Cancer, Vol. ■, No. ■, ■-■ © 2018 Elsevier Inc. All rights reserved.

Keywords: Brain metastases, Metastases, NCDB, NSCLC, National Cancer Database

Introduction

Lung cancer is the leading cause of cancer-related death in the United States.¹ Non—small-cell lung cancer (NSCLC) accounts for 87% of lung cancer cases, and approximately 40% of patients are diagnosed with metastatic disease at presentation, with the most

common sites of distant metastasis including the brain, liver, adrenal glands, and bones.²⁻⁴ Brain metastases remain a significant problem in patients with lung cancer for several reasons. First, they are commonly observed, accounting for approximately one-half of all solid tumor metastases to the brain.^{5,6} Second, there has been an apparent stage migration resulting from the availability of modern staging imaging modalities, such as positron emission tomography and magnetic resonance imaging (MRI), which can detect subclinical brain lesions. And finally, with the modest improvement in survival resulting from systemic therapies that lack intracranial penetration, patients tend to live longer, with more time to develop brain metastases.^{5,7}

The frequency of brain metastases at presentation in patients with NSCLC remains unknown. Several estimates have been reported in the literature, which have been limited by small sample

¹Division of Medical Oncology, Department of Medicine

²Department of Radiation Oncology

³Division of Public Health Sciences, Department of Surgery

⁴Department of Surgery, Washington University School of Medicine, St. Louis, MO

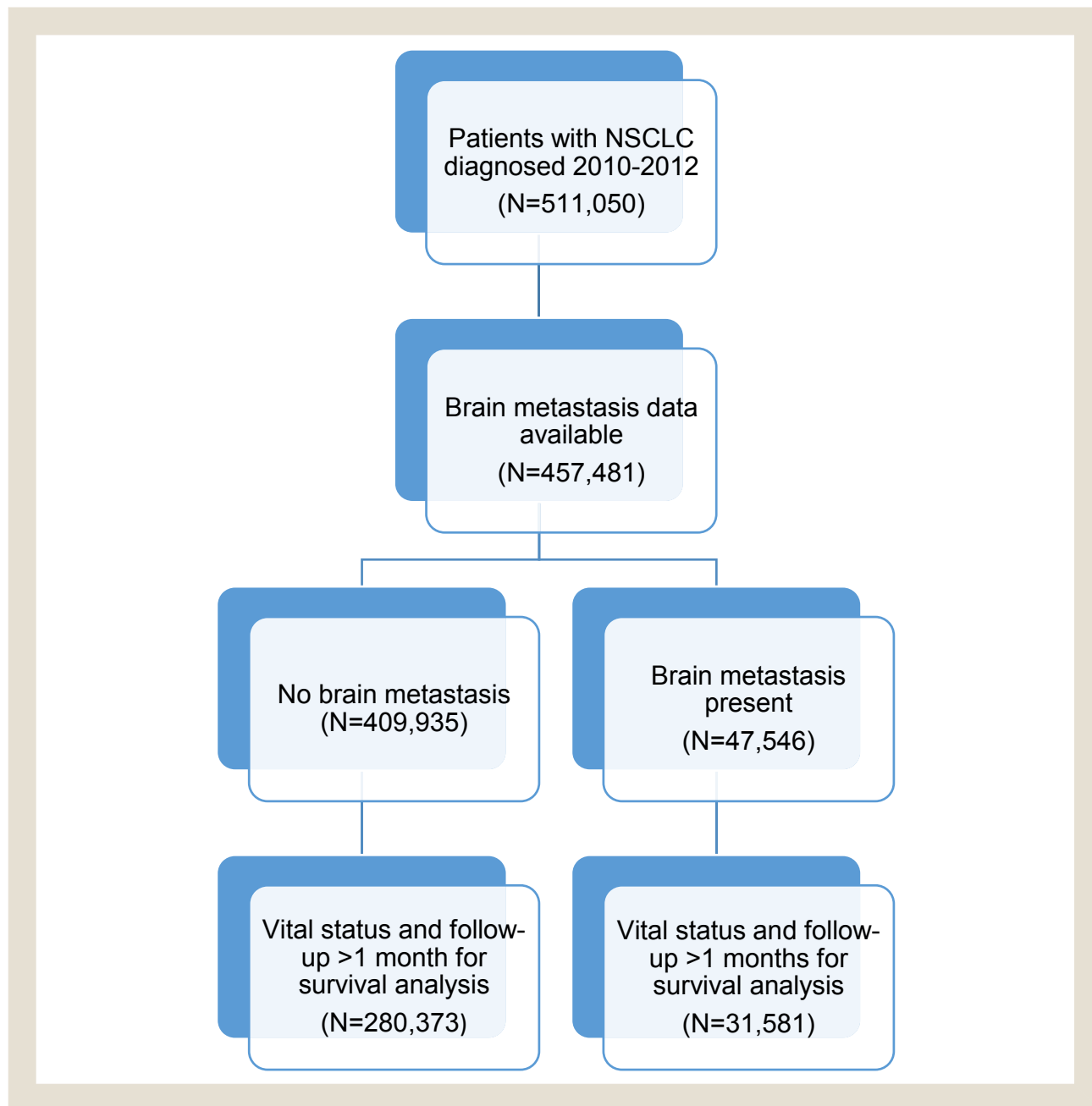
Submitted: Oct 2, 2017; Revised: Jan 15, 2018; Accepted: Jan 24, 2018

Address for correspondence: Daniel Morgensztern, MD, Associate Professor of Medicine, Division of Oncology, Washington University School of Medicine, 660 S. Euclid, Box 8056, St Louis, MO 63110

E-mail contact: danielmorgensztern@wustl.edu

NSCLC With Brain Metastasis

Figure 1 Flow Diagram Showing Patients Included in the Analysis



Abbreviation: f/u = follow-up.

size and selection bias owing to the setting from which these patient samples are drawn.⁸⁻¹⁰ Therefore, a large study examining the frequency of brain metastases and validation of previously described clinical risk factors, such as age, histology, and gender, may provide a better understanding of both the prevalence and risk factors for the development of brain metastases.^{8,11} We sought to systematically address these questions using the National Cancer Data Base, which captures data from approximately 70% of cancer cases in the United States and also includes data on brain metastases since 2010.

Patients and Methods

We searched the National Cancer Data Base registry data for patients with NSCLC diagnosed between 2010 and 2012 with complete data on brain metastases. Demographic and clinical variables included age at diagnosis, gender, race, histology, tumor size, tumor grade, lymph node status (N), and American Joint Committee on Cancer stage. Age at diagnosis was analyzed as a continuous variable. Tumor size was subdivided into ≤ 3 cm, 3.1 to 5 cm, 5.1 to 7 cm, and > 7 cm to match the American Joint Committee on Cancer Seventh Edition staging for T1, T2a, T2b,

Download English Version:

<https://daneshyari.com/en/article/8614376>

Download Persian Version:

<https://daneshyari.com/article/8614376>

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