



Contents lists available at ScienceDirect

Lung Cancer

journal homepage: www.elsevier.com/locate/lungcan



The clinical significance of cytology versus histology-based diagnosis in small cell lung cancer: A retrospective study

Alexios Strimpakos^a, Ekaterini Politi^a, Elias Kainis^a, Dimitra Grapsa^a, Spiros Siolos^a, Sofia Tsagouli^a, Rodoula Trigidou^b, Konstantinos Syrigos^{a,*}

^a Oncology Unit GPP, "Sotiria" General Hospital, Athens School of Medicine, Mesogion 152, 11527 Athens, Greece

^b Pathology Department, "Sotiria" General Hospital, Mesogion 152, 11527 Athens, Greece

ARTICLE INFO

Article history:

Received 25 January 2014

Received in revised form 21 April 2014

Accepted 28 April 2014

Keywords:

Histology

Cytology

Small cell lung carcinoma (SCLC)

Survival

Diagnostic accuracy

Prognosis

ABSTRACT

Objectives: The aim of this study was to investigate the clinical significance of cytology versus histology-based diagnosis among patients diagnosed with small cell lung cancer (SCLC).

Materials and methods: Retrospective analysis of medical records of 443 patients with histologically or cytologically confirmed small cell lung carcinoma (SCLC) was performed. All patients received platinum-based chemotherapy regimens. Survival data (overall survival) were compared between patients with histology or cytology-based diagnosis in the overall study population as well as after stratification of patients according to disease stage (limited or extensive) at the time of diagnosis.

Results: Distribution of demographics and clinicopathological characteristics among the two groups ("histology" and "cytology") was similar. No statistically significant differences in the survival curves between the "histology" and "cytology" groups were found in the overall study population (log rank test, $p = 0.237$), as well as in the subgroup of patients with limited disease (log rank test, $p = 0.474$). In contrast, patients with histology-based diagnosis had a statistically significant longer survival as compared to those with cytology-based diagnosis in the extensive disease subgroup (log rank test, $p = 0.031$), but this association was not retained after adjusting the analysis for demographics and clinical characteristics via a Cox regression model (HR = 1.18, 95% CI: 0.96–1.44, $p = 0.110$).

Conclusion: The results of our study suggest that the type of diagnostic modality employed (histology or cytology-based) for the establishment of a diagnosis of SCLC may not have a significant effect on the overall survival of patients. Further studies are warranted to further investigate this important, yet rather unexplored, issue.

© 2014 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Small cell lung carcinoma (SCLC) is the most aggressive subtype of lung cancer, characterized by rapid growth, early metastatic dissemination, increased sensitivity to chemotherapy and radiation and an almost invariable development of treatment resistance during the course of the disease [1]. Although the incidence of SCLC has been declining over the past decade and limited-stage disease (LD) has become a potentially curable disease though significant treatment advances, this malignancy remains a major cause of cancer mortality worldwide [1,2]. Approximately 70% of patients with SCLC present with extensive disease (ED) which carries a particularly dismal prognosis, while the overall 5-year survival rate

for all patients, regardless of disease stage, does not exceed 5–10% [3].

Undoubtedly, accurate discrimination between SCLC and other histological subtypes of lung cancer is of vital importance for optimal therapeutic decision-making and improved prediction of patients' response to treatment, and this need has become even more pronounced with the advent of novel targeted therapies for non-small cell lung cancer (NSCLC) [4,5]. Histological examination of surgically resected or autopsy specimens remains the gold standard for the final diagnosis and accurate cell typing of lung cancer, but is available only in a minority of cases presenting with operable early stage disease [5,6]. For this reason, less invasive diagnostic techniques (core needle or bronchoscopic biopsies) and cytological diagnostic methods (sputum cytology, bronchial brushing/washing and fine needle aspiration) are commonly employed for the evaluation of suspected lung cancer [6,7]. SCLC in particular is almost invariably considered inoperable by definition, even in cases with

* Corresponding author. Tel.: +30 210 7475034; fax: +30 210 7781035.
E-mail address: ksyrigos@med.uoa.gr (K. Syrigos).

LD at the time of diagnosis, and is typically diagnosed on non-surgical biopsies or cytology specimens.

The comparative diagnostic accuracy of histological and cytological diagnostic procedures has been assessed by several research groups, and most previous data suggest that SCLC can be correctly diagnosed on both modalities [5,8–13]. On the other hand, the exact clinical significance of histology versus cytology-based diagnosis in SCLC has not been studied yet. The aim of this study was to investigate this rather unexplored issue, by comparing the clinical outcome (overall survival) between patients with histological confirmation and those with cytological confirmation of SCLC.

2. Patients and methods

2.1. Study design

This study was a retrospective analysis of medical records of patients with histologically or cytologically confirmed SCLC, treated in the Oncology Unit of “Sotiria” General Hospital, Athens, Greece, for the time period between January 2000 and December 2011. Cases with incomplete demographic, clinical and/or outcome data were excluded from analysis. Staging was done according to the two-stage system developed by the Veterans Administration Lung Cancer Study Group; SCLC was defined as LD, when tumor was confined to one hemithorax, comprising ipsilateral, mediastinal and supraclavicular lymph nodes, and as ED when metastases were present in the contralateral chest or at distant sites. Patients were further divided in two groups (“histology” and “cytology”), depending on the type of modality employed for the establishment of diagnosis (histological or cytological, respectively).

The histological and cytological diagnostic methods used in our study population included small biopsies (bronchoscopic or core needle biopsies), and sputum cytology, bronchial brushings and transthoracic FNA cytology specimens, respectively. Collection, processing and microscopic evaluation of histological and cytological specimens were performed according to standard procedures, as previously described.

2.2. Statistical analysis

Quantitative variables were expressed as mean values (SD). Qualitative variables were expressed as absolute and relative frequencies. For the comparisons of proportions chi-square tests were used. Student's *t*-test was used for the comparison of mean values. Overall survival (OS) was measured from initiation of treatment to the date of death. Life table analyses were used to calculate cumulative survival rate (standard errors) for specific time intervals. Kaplan–Meier survival estimates were graphed over the follow-up period for the study groups. Log-rank tests were used for the comparison of survival curves. Cox regression analysis was conducted in order to determine differences in survival between the histology and cytology groups after adjusting for demographics and clinical characteristics, as well as to evaluate the interaction of stage with the type of diagnostic modality employed (histology vs. cytology). The assumption of proportional hazards was evaluated by testing for interaction with a continuous time variable. All reported *p* values are two-tailed. Statistical significance was set at $p < 0.05$ and analyses were conducted using SPSS statistical software (version 19.0).

3. Results

A total of 443 patients, 370 men and 73 women, with a mean age of 64.3 years (SD=9.1 years) were included in the present study. Overall, 282/443 patients (63.7%) were diagnosed by histology

Table 1
Demographics and clinicopathological characteristics by study group (“histology” versus “cytology”).

	Histology N (%)	Cytology N (%)	P
Sex			
Men	232(82.3)	138(85.7)	0.347*
Women	50(17.7)	23(14.3)	
Age (years), mean (SD)	64.3(9.1)	64.3(9.2)	0.974**
PS			
0	87(30.9)	52(32.3)	0.074*
1	141(50)	65(40.4)	
≥2	54(19.1)	44(27.3)	
Stage			
Limited	88(31.2)	51(31.7)	0.918*
Extensive	194(68.8)	110(68.3)	

* Chi-square test.

** Student's *t*-test.

PS, performance status.

and 161/443 patients (36.3%) by cytology, while 304/443 patients (68.6%) had ED at diagnosis. Distribution of baseline demographics and clinicopathological characteristics by subgroups of patients (“histology” and “cytology”) is shown in Table 1 and was similar among the two groups. In the “histology” group, the male/female ratio was 232:50, the mean age was 64.3 years (SD=9.1 years), 68.8% of patients had extensive disease stage at diagnosis, performance status was 0 in 87 patients (30.9%), 1 in 141 patients (50.0%) and ≥2 in 54 patients (19.1%). In the “cytology” group, the male/female ratio was 138:23, the mean age was 64.3 years (SD=9.2 years), 68.3% of patients had extensive disease stage at diagnosis and performance status was 0 in 52 patients (32.3%), 1 in 65 patients (40.4%) and ≥2 in 44 patients (27.3%). All patients received platinum-based chemotherapy regimens. Radiotherapy was administered in 180/443 patients (40.6%), including 113/282 patients (40.1%) in the “histology” group and 67/161 patients (41.6%) in the “cytology” group. Prophylactic cranial irradiation was performed in 60/443 patients (13.5%), including 40/282 patients (14.2%) in the “histology” group and 20/161 patients (12.4%) in the “cytology” group.

Statistical analysis showed no significant association between the diagnostic modality employed (histology or cytology-based) and the time period at diagnosis. More specifically, during the time periods from 2000 to 2005 and from 2006 to 2011, 62.2% and 64% of patients, respectively, were diagnosed by histology, while 37.8% and 36.0% of patients, respectively, were diagnosed by cytology ($p = 0.824$). Similarly, during the time periods from 2000 to 2007 and from 2008 to 2011, 63.6% and 63.7% of patients, respectively, were diagnosed by histology, while 36.4% and 36.3% of patients, respectively, were diagnosed by cytology ($p = 0.994$).

Immunohistochemistry and immunocytochemistry (for a variety of markers, mainly including TTF-1, CD56, synaptophysin and chromogranin) were performed in 74.9% of all cases (332/443), including 72.3% (204/282) and 79.5% (128/161) of cases diagnosed by histology and cytology, respectively. No statistically significant association was found between the use of immunochemistry and the diagnostic modality employed (histology versus cytology) ($p = 0.094$); furthermore, increased use of immunochemistry was noted: (a) during the years from 2006 to 2011, as compared to the time period from 2000 to 2005 ($p < 0.001$) and (b) during the years from 2008 to 2011 as compared to the time period from 2000 to 2007 ($p < 0.001$).

The mean survival time in the “histology” group, was 10.8 months (SD=12.5) with median equal to 7.7 months (interquartile range from 3.8 to 13.2 months), while the mean survival time in the “cytology” group was 9.7 months (SD=12.3) with median equal to 6.3 months (interquartile range from 3.0 to 11.7 months).

Download English Version:

<https://daneshyari.com/en/article/10910916>

Download Persian Version:

<https://daneshyari.com/article/10910916>

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