

# The Analysis of Cell Type and Age Patern in Lung Cancer Patients within Six Years

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## Abstract

**Study objectives:** Some epidemiological characters are said to be changed occasionally in lung cancer (LC). **Design and Setting** This study was designed to evaluate the clinical files of last six years retrospectively to answer if age patern and histological cell type of LC patients change within years or not. **Patients or Materials:** The cell type, age patern and year of dagnosis were obtained in all LC patients. **Measurements and Results:** Of totally 2083 patients with LC, 2029 (97.4%) were men and 54 (2.6%) were women. The mean age was 61.3 years. In histopatologically classified group (n:1870), non-small cell LC and small cell LC were reported in 1515 (81%) and 355 (19%). There was no tendency of change for histological cell types in LC within six years ( $p>0.05$ ). The mean ages of LC patients during diagnosis did not change in both gender within six years ( $p>0.05$ ). By classifying the patients with LC according to the ages, it was seen that there was no significant change in the number of cases below 40 years old, 41-60 years and over 60 years old, in six years ( $p>0.05$ ) **Conclusions:** There is no tendency of change for frequencies of histological cell types in LC, within last six years. The mean ages of LC patients during diagnosis did not change in both gender and the number of cases below 40 years old or above 60 years old did not increase.

**Keywords:** Lung cancer, histologic cell type, age.

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## INTRODUCTION

Despite anti-tobacco campaigns, new diagnostic and therapeutic modalities, lung cancer (LC) causes one million deaths per year worldwide [1].

Following the patterns of LC histologic types can give additional information on evolving cigarette design and the effects of geographical factors. Some epidemiological characters are said to be changed occasionally in LC [2,3].

This study was designed to evaluate the clinical files retrospectively to answer if age patern and histological cell type of LC patients change within years or not.

## MATERIALS AND METHODS

Medical data of all patients hospitalized in Department Of Thoracic Medicine between 1999 and 2004 were

reviewed. Of the total patients, there were 2083 patients those diagnosed LC with histopathology. They were evaluated regarding the ages, year of diagnosis and the cell type of the tumor.

Oneway Anova was used to analyze age patern of LC patients according to total group and gender, where Mann-Whitney test was used to analyze the ordinal variables of tumor histological type according to years. Patients were divided to three age groups (<40 years, 41-60 years and 61 years<) and difference according to years was investigated using Pearson Chi-Square test.

## RESULTS

Of totally 2083 patients with LC, 2029 (97.4%) were men and 54 (2.6%) were women. The mean age was 61.3 years. The cell type of the tumor could not have been histologically classified by the pathologist in 213 (10.2%). In histopatologically classified group (n:1870), NSCLC and SCLC were reported in 1515 (81%) and 355 (19%), respectively (Table 1).

There was no tendency of change for histological types in LC within six years ( $p>0.05$ ) (Table 2 and Table 3). The mean ages of LC patients during diagnosis did not change in both gender within six years ( $p>0.05$ ) (Table 4).

By classifying the patients with LC according to the ages, it was seen that there was no significant change in the number of cases below 40 years old, 41-60 years and over 60 years old, in six years ( $p>0.05$ ) (Table 5).

## DISCUSSION

There is no tendency of change for frequencies of histological types in LC, within last six years. The mean ages of LC patients during diagnosis did not change in both gender within six years and the number of cases below 40 years old did not increase.

Lung cancer is now the most frequently diagnosed major cancer in the world and is also the most common cause of cancer deaths in males and females worldwide. Reported LC incidence trends in United States revealed that the rates of squamous cell carcinoma, small cell carcinoma and large

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**Table 1.** Histologically Classified Cell Types In Lung Cancer Patients.

The Cell Type	Frequency (n-%)
NSCLC	860 (41.3%)
Adenocarcinoma	209 (10%)
Squamous cell carcinoma	430 (20.6%)
Large cell carcinoma	8 (0.4%)
SCLC	355 (17%)
Undifferentiated carcinoma	213 (10.2%)
Neuroendocrin tumor	3 (0.1%)
Adenosquamous carcinoma	1 (0.05%)
Bronchoalveolar carcinoma	3 (0.1%)
Carcinosarcoma	1 (0.05%)
Total	2083

cell carcinoma had declined among males after peaks in 1981 and 1982, 1986 and 1987, and 1986 and 1988, respectively [4].

In a population-based study of 20561 cases; women were younger than men (60.02 versus 62.18 years), age <50 years was more frequent in women than in men. Squamous cancer was the predominant type of LC both in women (32.5%) and men (55.2%). However, SCLC (26.6% versus 19.9%;  $P < 0.001$ ) and adenocarcinoma (21.6% versus 9.6%;  $P < 0.001$ ) were more frequent in women than in men [5]. In present study, there were no difference between two gender's ages in LC patients. Squamous cell carcinoma was the predominant type of LC (%20.6), where NSCLC was 81% of all LC patients.

A study, reporting national data, revealed that 9.2% of cases were in early age (<45) and 90.2% of them were in older age (>45). When the early and older age patients

have been investigated for histological distribution related with gender, there was no statistically significant effect in females, but small cell carcinoma was seen 44.7% in younger males and 29.1% in older males [6].

In an analysis of two years, 1992 and 1998, no significant change was detected in number of cases below 40 years of age whereas there was a significant increase in the number of cases over 60 years of age ( $p < 0.0005$ ). Another study analyzing 2216 patients in 1997-2000 revealed that by years, the incidence of squamous cell carcinoma was decreasing, but adenocarcinoma was increasing [7]. When we classified the patients to three age groups, we did not detect any change for age patern within six years. That means the frequency of LC patients those have age patern below 40 years old or above 60 years old did not differ in last six years.

The increase in lung adenocarcinoma since the 1950s is more consistent with changes in smoking behavior and cigarette design than with diagnostic advances [8-10]. The National Cancer Data Base report on LC, comparing the years 1986-1987 with 1992, revealed an increasing relative frequency of adenocarcinoma [11].

Yılmaz et al reported no change in the mean age patern between 1992 and 1998. While the proportion of cases with squamous cell carcinoma decreased from 60.6% in 1992 to 49.7% in 1998, the proportion of cases with adenocarcinoma increased from 13.5% in 1992 to 30.9% in 1998 ( $p < 0.0001$ ) [12].

There had been a shift in the histology pattern with an increase in the percentage of adenocarcinoma ( $P = 0.0011$ ) and a decrease in percentage of squamous cell carcinoma ( $P = 0.0027$ ) in males, inversely, there has been an absolute and a relative decrease of percentage in adenocarcinoma in females ( $P = 0.0028$ ) [13]. In the present study, it was ob-

**Table 2.** The Frequencies Of The Cell Types Of Lung Cancer In Six Years.

The Cell Type	1999	2000	2001	2002	2003	2004	Total
NSCLC*	148 (39.7%)	124 (32.2%)	125 (36.8%)	196 (48.5%)	177 (49.9%)	90 (39.8%)	860
Adenocarcinoma*	31 (8.3%)	46 (11.9%)	30 (8.8%)	35 (8.7%)	35 (9.9%)	32 (14.2%)	209
Squamous cell carcinoma*	84 (22.5%)	92 (23.9%)	94 (27.6%)	66 (16.3%)	55 (15.5%)	39 (17.3%)	430
Large cell carcinoma†	2 (0.5%)	1 (0.3%)	3 (0.9%)	-	-	2 (0.9%)	8
SCLC*	69 (18.5%)	63 (16.4%)	45 (13.2%)	61 (15.1%)	69 (19.4%)	48 (21.2%)	355
Undifferentiated carcinoma*	39 (10.5%)	59 (15.3%)	42 (12.4%)	44 (10.9%)	17 (4.8%)	12 (5.3%)	213
Neuroendocrin tumor†	-	-	1 (0.3%)	-	1 (0.3%)	1 (0.4%)	3
Adenosquamous carcinoma†	-	-	-	1 (0.2%)	-	-	1
Bronchoalveolar carcinoma†	-	-	-	1 (0.2%)	1 (0.3%)	1 (0.4%)	3
Carcinosarcoma†	-	-	-	-	-	1 (0.4%)	1
Total	373	385	340	404	355	226	2083

\* ( $p > 0.05$ ), † (not suitable for statistical analysis)

**Table 3.** The Frequencies Of Two Cell Types Of Lung Cancer In Six Years.

The Cell Type	1999	2000	2001	2002	2003	2004	P
NSCLC	265 (81.5%)	263 (83.6%)	253 (86.8%)	299 (84.9%)	269 (80.6%)	166 (78.8%)	>0.05
SCLC	69 (18.5%)	63 (16.4%)	45 (13.2%)	61 (15.1%)	69 (19.4%)	48 (21.2%)	>0.05
Total	373	385	340	404	355	226	

**Table 4.** The Mean Age Of Lung Cancer Patients On Diagnosis In Six Years.

Gender	1999	2000	2001	2002	2003	2004	Mean	P
Male	60.8	61.8	60.1	60.9	62.3	60.7	61.3	0,227
Female	-	-	63.0	59.2	61.9	63.9	61.5	0,714
Total	60.8	61.8	61.2	60.8	62.3	60.9	61.3±9.8	0,228

served that squamous cell carcinoma declined from 22.5% to 17.3% and adenocarcinoma increased from 8.3% to 14.2% within last six years. But these tendencies were not statistically significant. The frequencies of NSCLC and SCLC are also from 1999 to 2004. The authors think that a percentage of 41.3% for histological diagnosis of NSCLC causes a restriction for analyzing the cell type subgroups.

In conclusion, there is no tendency of change for frequencies of histological types in LC, within last six years. The mean ages of LC patients during diagnosis did not change in both gender within six years and the number of cases below 40 years old and above 60 years old did not increase. Beside a large patient group with LC, the study has the disadvantage of an evaluation of a short period data to

analyze epidemiological changes. Data of a longer period will be more informative and will better show the searched change patern.

## REFERENCES

1. Alberts WM. Lung cancer. Introduction. Chest 2003; 123: 1-2.
2. Alberg AJ, Samet JM. Epidemiology of lung cancer. Chest 2003; 123:21-49.
3. Thun MJ, Lally CA, Flannery JT et al. Cigarette smoking and changes in the histopathology of lung cancer. J Natl Cancer Inst 1997;89:1580-6.
4. Travis WD, Lubin J, Ries L et al. United States lung carcinoma incidence trends: declining for most histologic types among males, increasing among females. Cancer 1996;77:2464-70.
5. Radzikowska E, Glaz P, Roszkowski K. Lung cancer in women: age, smoking, histology, performance status, stage, initial treatment and survival. Population-based study of 20 561 cases. Ann Oncol 2002; 13:1087-93.
6. Karlıkaya C, Edis EÇ. Lung cancer histopathology in the Thrace region of Turkey and comparison with national data. Tüberküloz ve Toraks Dergisi 2005;53:132-8.
7. Yurdakul AS, Çalısır HC, Demirağ F et al. Distribution of histologic types of lung cancer (In Turkish). Toraks Dergisi 2002;3: 59-65.
8. Janssen-Heijnen ML, Coebergh JW. The changing epidemiology of lung cancer in Europe. Lung Cancer 2003;41:245-58.
9. Thun MJ, Lally CA, Flannery JT et al. Cigarette smoking and changes in the histopathology of lung cancer. J Natl Cancer Inst 1997;89:1580-6.
10. Koyi H, Hillerdal G, Branden E. A prospective study of a total material of lung cancer from a county in Sweden 1997-1999: gender, symptoms, type, stage, and smoking habits. Lung Cancer 2002;36: 9-14.
11. Fry WA, Menck HR, Winchester DP. The National Cancer Data Base report on lung cancer. Cancer 1996;77:1947-55.
12. Yılmaz A, Özvaran K, Unutmaz S, et al. Are the distribution of tumor type and some epidemiologic features of cases with lung cancer changing?. Toraks Dergisi 2001;2:6-8. (In Turkish)
13. Cha Q, Chen Y, Du Y. The trends in histological types of lung cancer during 1980-1988, Guangzhou, China. Lung Cancer 1997; 17:219-30.

**Table 5.** The Distribution Of Patients With Lung Cancer According To The Age Of Diagnosis In Six Years.

Year Of Diagnosis	<40 Years	Between 41-60 Years	>60 Years	Total
1999*	11 (2.9%)	154 (41.3%)	208 (55.8%)	373
2000*	11 (2.9%)	156 (40.5%)	218 (56.6%)	385
2001*	3 (0.9%)	149 (43.8%)	188 (55.3%)	340
2002*	8 (2%)	184 (45.5%)	212 (52.5%)	404
2003*	7 (2%)	120 (33.8%)	228 (64.2%)	355
2004*	5 (2.2%)	98 (43.4%)	123 (54.4%)	226
Total	45 (2.2%)	861 (41.3%)	1177 (56.5%)	2083

\*p &gt; 0.05