



## ORIGINAL RESEARCH

### ANALYSIS OF 138 CASES OF LUNG CANCER IN A TRAINING HOSPITAL COMPARED TO THE DATA OF LUNG CANCER CASES DIAGNOSED TEN YEARS PREVIOUSLY

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#### ABSTRACT

**Objective:** To analyze data of cases with lung cancer (LC) diagnosed in our clinic over a one year period and compare them with data of cases with LC diagnosed ten years previously.

**Methods:** The demographic data, radiological and bronchoscopic findings, diagnostic methods, and histological type and stages of the patients diagnosed with lung cancer in 2005 were evaluated.

**Results:** Over a one year period, 138 patients were diagnosed with LC. 104 (75.4%) were men and 34 (24.6%) were women. Mean age was  $63.78 \pm 9.53$  (38-83). 118 (86.5%) of the patients had  $39 \pm 16.34$  (5-90) pack-years smoking history. Squamous cell carcinoma (SCC) was diagnosed in 40.6% of patients, adenocarcinoma in 29.0%, small cell carcinoma in 21.0%, combined type in 8.0% and carcinoma with unidentified cell type in 1.4%. Squamous cell carcinoma was more common among smoking patients. It was determined that the distribution of histological types in this study was similar to the previous studies, however the incidence of LC was found as increased in females in our study when compared to previous studies.

**Conclusion:** We conclude that SCC is the most common histological type in patients with LC in our clinic and the male to female ratio for LC is decreasing.

**Keywords:** Lung cancer, Epidemiology, Histological type

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## BİR EĞİTİM HASTANESİNDE AKCİĞER KANSERİ TANISI KONAN 138 OLGUNUN ANALİZİ VE 10 YIL ÖNCE AKCİĞER KANSERİ TANISI KONAN HASTALARIN VERİLERİYLE KARŞILAŞTIRMA

### ÖZET

**Amaç:** Bir yıllık süreçte kliniğimizde tanı konan akciğer kanserli (AK) olguların verilerini incelemek ve 10 yıl önce tanı konan AK'li olguların verileriyle karşılaştırmak.

**Yöntem:** Kliniğimizde Ocak 2005-Ocak 2006 arasında yatarak AK tanısı alan olgularımızın demografik özellikleri ile radyolojik ve bronkoskopik bulguları, tanı yöntemleri, histopatolojik tanıları ve evreleri değerlendirildi.

**Bulgular:** Bir yıllık süreçte 138 hastaya AK tanısı konuldu. Yaş ortalaması 63,78±9,53 (38-83) olup 104'ü (%75.4) erkek, 34'ü (%24.6) kadın idi. Olguların 118 (%86.5)'inde 39±16,34 (5-90) paket-yıl sigara hikayesi vardı. Yassı hücreli akciğer kanseri (YHAK) %40.6, adeno kanser %29.0, küçük hücreli akciğer kanseri %21.0, kombine tip %8.0, hücre tipi tanımlanamayan ise %1.4 olarak saptandı. Sigara içenlerde YHAK ilk sırada yer aldı. Sonuçlarımızı ülkemizde daha önce yapılan çalışmalar ile karşılaştırdığımızda, hücre tipleri arasındaki oranların değişmediğini, kadınlarda ise AK'nin arttığını tespit ettik.

**Sonuç:** Kliniğimizde AK'li hastalarda en sık görülen histopatolojik tip YHAK'dir. AK'li hastalarda kadın/erkek oranı düşmektedir.

**Anahtar Kelimeler:** Akciğer kanseri, Epidemiyoloji, Histolojik tip

### INTRODUCTION

Smoking is a major public health problem worldwide. Smoking, which increased in developed countries during the early years of the century was found to be related to the increase in the incidence of lung cancer. Later, the smoking rate decreased in developed countries through anti-smoking campaigns, and lung cancer incidence tended to decrease. However, smoking in women compared to men started to increase later on.

Lung Cancer (LC) accounts for 32% of all cancer deaths in the United States of America (USA)<sup>1</sup>. According to national cancer data published in the USA, there is a downward tendency in male lung cancer cases, with an upward tendency in women<sup>2</sup>. Lung cancers continued to be the most common causes of cancer death in men with 171 900 deaths estimated in 2006 (26.3% of all cancer deaths). Although less common than in men, it is the third cause of death from cancer in women (64 100, 12.5% of total deaths), with high rates observed in Northern and Central Europe<sup>3</sup>. According to the data published by the Ministry of Health in our country, LC is the most common cancer in men with 29.38%, and ranks 6<sup>th</sup> in women with 4.07%<sup>4</sup>.

It is estimated to rank higher with the increase of smoking in women. In a study made in our clinic in the 1990s, an increasing tendency of LC among women was been observed<sup>5</sup>.

The aim of the present study was to describe the clinical and radiological characteristics of lung cancer diagnosed over a one year period. We also compared the data of patients with LC diagnosed in our clinic 10 years previously and we investigated its alteration in time.

### MATERIAL AND METHOD

Between January 2005 and January 2006, 1983 patients were hospitalized in the Department of GATA Haydarpaşa Training Hospital. While 865 of the patients were hospitalized in the tuberculosis unit because of tuberculosis suspicion, 1118 of the patients were hospitalized in the nontuberculosis unit. Patients diagnosed with LC were taken into consideration. However, patients with metastatic lung cancer and diagnosed in different centers were kept out of this study. Age, sex and smoking habits were recorded. Moreover, radiological and bronchoscopic findings, diagnostic methods and histological cell types and stages by TNM classification were recorded.



SPSS 13.0 for Windows software program was used for statistical analysis. Descriptive statistics and chi-squared testing was used for the nominal data.

## RESULTS

One hundred and thirty-eight of the patients were diagnosed with LC over a one-year period in our clinic. Mean age of these cases was  $63,78 \pm 9,53$  (38-83), with 104 (75.4%) of them being men and 34 (24.6%) women.

In 118 (94 men, 24 women) (86.5%) of the patients, there was  $39 \pm 16,34$  (5-90) pack-years smoking history. The smoking rate was 90.38% among males with LC, and 70.58% in the female cases. The smoking history in men and women was  $40.06 \pm 16.00$  and  $34.91 \pm 17.33$  pack-years respectively. Eleven of the cases had passive smoking history.

In our study, the frequency of histological types of LC were distributed respectively as follows: squamous cell carcinoma (40.6%), adenocarcinoma (29.0%), small cell carcinoma (21.0%), combined type (8.0%) and carcinoma with unidentified cell type (1.4%). While squamous cell carcinoma was the most common histological type in men, adenocarcinoma was the most common type in women (Table I)

Squamous cell carcinoma was the most common type of LC among smokers. While two of eleven cases with a passive smoking history had squamous cell carcinoma, six of

them had adenocarcinoma, and three of them had small cell carcinoma. We found no statistical significance for smoking and cell type relationship ( $p < 0.05$ ). The distribution of cell types by smoking habits is given in Table I.

Radiological examination showed that 73.9% of the lesions were centrally located. Bronchoscopic examination demonstrated an endobronchial mass in 60.1% of cases. An endobronchial mass was observed to be more common in squamous cell carcinoma. 72.5% of the cases were diagnosed by bronchoscopic biopsy and lavage. Radiological, bronchoscopic characteristics of cases by cell types are given in Table I. Diagnostic methods are given in Table II for those with and without endobronchial mass.

Of the cases, 73.2% were found as stage IIIb and IV by using TNM classification. Metastasis was most frequently detected in small cell carcinoma, with bone metastasis ranking first. And, malignant pleural effusion was most frequently detected in adenocarcinoma (Table III).

Distribution of the cases according to years is shown in Table IV. Following the Table IV, it can be seen that the male to female ratio is 3.05/1 in 2005 and 8.9/1 between 1993 and 1997.

**Table I:** Distribution of the cases according to sex, smoking habit, tumor location and endobronchial mass.

	Squamous cell	Adeno cell	Small cell	Combined type	Cell type unidentified	Total
<b>Sex</b>						
• Male	11	15	7	-	1	34
• Female	45	25	22	11	1	104
<b>Smoking Habit</b>						
• Smoker	49	33	23	11	2	118
• Non-smoker	5	1	3	-	-	9
• Passive smoker	2	6	3	-	-	11
<b>Tumor Location</b>						
• Central	46	25	19	10	2	102
• Peripheral	10	15	10	1	-	36
<b>Endobronchial Mass</b>						
• Yes	37	21	16	7	2	83
• No	19	19	13	4	-	55

**Table II:** Distribution of the cases according to diagnostic methods.

	Squamous cell	Adeno cell	Small cell	Combined type	Cell type unidentified	Total
<b>Diagnostic Methods</b>						
• Sputum	13	6	10	1	1	31
• Bronchoscopic	42	26	22	8	2	100
• TTNAB	14	14	6	2	-	41
<b>Diagnostic methods in case with endobronchial lesion*</b>						
• Sputum	11/37	6/21	7/16	0/7	1/2	25/83
• Bronchoscopic	37/37	19/21	16/16	7/7	2/2	81/83
• TTNAB	0/3	2/2	-	-	-	2/5
<b>Diagnostic methods in case without endobronchial lesion*</b>						
• Sputum	2/19	0/19	3/13	1/4	-	6/55
• Bronchoscopic	5/19	7/19	6/13	1/4	-	19/55
• TTNAB	14/14	12/12	6/8	2/2	-	34/36

\*: Rates show diagnosis/procedure

**Table III:** Distribution of the cases according to metastasis locations.

	Squamous cell	Adeno cell	Small cell	Combined type	Cell type unidentified	Total
<b>Metastasis Locations</b>						
• Liver	2	4	5	2	-	13
• Surrenal	-	8	7	-	-	15
• Bone	8	8	10	-	-	26
• Lung	6	2	6	1	-	15
• Malignant pleural effusion	7	11	6	1	-	25
• Other	-	3	-	-	-	3

**Table IV:** Distribution of the cases according to years.

Years	Number of cases	Number of female cases	Male/Female ratio
1993-1997	393*	44*	8.9:1**
2005	138	34	3.05:1

\*: Total number of the 5 years

\*\* : Mean rate of the 5 years

## DISCUSSION

Lung cancer is the most common cause of mortality among malign diseases worldwide<sup>6-9</sup>. Lung cancer increases with age. Lung cancer incidence increases between 35-75 ages in both sexes<sup>10</sup>. In our study, mean age of patients diagnosed with LC was 63,78±9,53.

The male to female ratio is 10/1 in a report issued by the Cancer Control Department of the Ministry of Health in 1998 and in recent studies<sup>11-14</sup>. In another study made by Karlikaya et al. in the region of Thrace, the male to female ratio was found as 20.7/1<sup>15</sup>. A study made by Okutan et al. revealed that the male to female ratio was 8.9/1 between 1993 and 1997 years in our clinic<sup>5</sup>. The male to female ratio is 3.05/1 in 2005 in the present



study. In a study conducted by Levi et al. in Switzerland from 1974 to 1994, the male to female ratio decreased from 8,3/1 to 4,1/1 within years<sup>16</sup>. Although the male to female ratio is bigger than two in European countries, it is decreasing in time.<sup>17</sup> In USA, Horn et al. found that the male to female ratio for lung cancer had decreased up to 3.1/1 in 1978, from 6.6/1 in 1969<sup>18</sup>. Similarly, in our study, the male to female ratio was found to be decreased compared to previous studies made in our country. The considerable increase in the percentage of cases diagnosed in women in our clinic in comparison with the previous cases may be attributable partly to the rise in smoking among women.

86.5% of our cases had 39±16,34 pack-years smoking history. The smoking rate was found to be 90.38% in men with LC, whereas the same rate was 70.58% in women. A study held in 1988 revealed that the overall smoking prevalence of general population was 43.6%<sup>19</sup>. Mutlu FS. et al found that the proportion of males reporting cigarette use was 51% and that of females was 35% in Turkey<sup>20</sup>. The smoking rate was found to be higher in cases diagnosed with LC compared to the general population. In Western and Northern America, the smoking rate started to decline among men after the 1950-60s, whereas, it showed a tendency to decline in women after the 1970s<sup>21</sup>. Lung cancer rates, after long-term rises, declined by over 10% in European males during the last decade. Lung cancer rates, in contrast, have risen by 15% in European women over the last decade. This reflects the persisting spread of the tobacco-related lung cancer epidemic among women, and again underlines the importance of urgent intervention to control tobacco smoking in women<sup>22</sup>. In our country, the smoking habit has not yet reached peak level both in men and women. Smoking is more common among men compared to women<sup>9</sup>. Intervention to control tobacco smoking should be made urgently. Antismoking campaigns will undoubtedly decrease the incidence of LC in future years.

In many European countries, the rate of the histological type of lung cancer is reported as

40% for squamous cell carcinoma, 25% for adenocarcinoma, and 25% for small cell carcinoma<sup>8,23</sup>. In our study, the frequency of histological types of LC were distributed respectively as follows: squamous cell carcinoma (40.6%), adenocarcinoma (29.0%), small cell carcinoma (21.0%), combined type (8.0%) and carcinoma with unidentified cell type (1.4%). Upon comparison with a previous study made in our clinic, we found that the histological cell type rates did not change. While squamous cell carcinoma was the most common histological type in men, adenocarcinoma was the most common histological type in women. Besides, there is a higher adenocarcinoma incidence in non-smokers than in smokers<sup>17</sup>. Eleven of our cases had passive smoking histories. Out of the 11 cases with passive smoking histories, 2 had squamous cell, 6 had adenocarcinoma, and 3 had small cell carcinoma. Although the number of cases is low, adenocarcinoma is the most common type in passive smokers.

Different lung cancer types show different locations. While squamous cell carcinoma is mostly centrally positioned, adenocarcinoma tends to show in peripheral locations<sup>24</sup>. Radiological examination of lesions seen in our cases showed that 73.9% of all LC was centrally located. While the central location rate in squamous cell carcinoma was 82.1%, this rate was found as 65.5% in small cell carcinoma, and 62.5% in adenocarcinoma. An endobronchial mass was observed in 60.1% of the cases. An endobronchial lesion was observed more commonly in squamous cell carcinoma (66.1%), than in the combined type (63.6%), thirdly in adenocarcinoma (52.5%) and with the lowest incidence in small cell carcinoma (41%). As squamous cell carcinoma mostly shows a central location, the endobronchial lesion observation rate was higher. In 81 of the 83 cases with endobronchial lesion, a diagnosis was made by bronchoscopic biopsy and lavage. A cytological examination of the sputum gave a diagnostic result in 25 of the same cases. 72.5% of the total cases were diagnosed by bronchoscopic biopsy and lavage. Diagnosis was reached with transthoracic needle





aspiration biopsy (TTNAB) in only two cases with endobronchial lesion. Diagnosis was made mostly with TTNAB in cases without endobronchial lesion. TTNAB was made for 36 of the 55 cases and 34 of them gave a diagnostic result. In a study conducted by Yurdakul et al., diagnosis was made by bronchoscopic method in 71.5%, TTNAB in 8.6%, sputum cytology in 0.4% and surgery in 19.5% of the cases<sup>11</sup>. As also determined in these studies, it is understood that bronchoscopy is the more common diagnostic method used in patients with LC. TTNAB is the second common diagnostic method used.

By using the TNM classification, 73.2% of the cases were found to be Stage IIIB and IV. In a study made in our country between 1994 and 1998, in 5359 patients with nonsmall cell lung cancer (NSCLC), Stage IIIB was found as 32.1%, and Stage IV was found as 40.4% (72.5% in total). However, disseminated disease was found as 62.1% in 1649 patients with small cell lung cancer (SCLC)<sup>8</sup>.

Thirteen patients had liver metastasis from LC, this was surrenal in 15, bone in 26, lung in 15, pleura in 25 and 3 in other systems. While metastasis was observed more commonly in small cell carcinoma, bone metastasis was detected more commonly in general. And, malign pleural effusion was detected more commonly in adenocarcinoma.

In developed countries, depending on the high smoking rate in previous years, lung cancer maintains its significance, but with a tendency to slow down. However, in developing and under-developed countries, high LC incidence will be maintained in the future, as today, depending on the high rate of smoking. Parallel with the high percentage of smoking in our country, the LC rate has a tendency to increase. We believe that interventions to control tobacco smoking will decrease the LC rates in our country, as in other countries that have obtained success in this struggle.

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