Original article

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DEMOGRAPHIC CHARACTERISTICS OF LUNG CANCER

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Lung cancer worldwide is the most common malignancy in men, whereas in women it ranks second. At the same time the lung cancer is the leading cause of cancer-related death. Today, smoking is considered as the major cause of lung cancer. About 90% of lung cancers in men and 78 % of lung cancers in women may be associated with long-term smoking.

A total of 173 patients with histologically confirmed NSCLC and SCLC were included in this prospective-retrospective study. In the study, all patients were divided into two groups: operable (117) and inoperable (56). To quantify the association of certain risk factors and the incidence of lung cancer, an odds ratio (OR) 95 % CI was calculated. To determine the level of significance, the value of p <0.05 was taken, and the value of p <0.01 was taken for high significance.

The mean age of the group was 60.2 ± 8.7 years, with the youngest patient in the study group aged 31 and the oldest 75 years. There were 80 pensioners (46.25%) and 59 (34,1%) able-bodied patients in the structure of the socioeconomic status. In regard to smoking status, the majority were smokers. The period of smoking was over 20 years and longer; in regard to intensity of smoking they were divided into three groups: smokers with more than 20 years of smoking experience and more than one pack of cigarettes per day - 49.13%, smokers with more than 20 years of smoking experience and one pack of cigarettes per day - 5.78%, and smokers who smoke more than 20 years but not continuously - 15.61%. Occupational exposure was present in 16.18% of the study population, while positive family history was present in 20.81% of patients. Regarding heredity, applying the Chi-square test, we have shown that heredity has a highly significant correlation with the type of cancer reported in both groups.

The demographic characteristics of the test are shown to be statistically significant in relation to lung cancer. *Acta Medica Medianae 2014;53(2):40-48.*

Key words: *age, smoking, socioeconomic status, occupational exposure, heredity*

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Introduction

Lung cancer is the most frequent malignacy in men, while it ranks second in the female population. At the same time, it is the leading cause of death among all cancer types (1) (Figure 1). Every year, about 1. 200. 000 of new cases of lung cancer are registered in the world, and the annual death rate is about 1.000.000 patients (2). At the moment of diagnosing, only 15% of the patients are in the first stage of the disease. In spite of advances in surgery and new chemotherapeutic agents, the prognosis of disease and patient survival have not changed a lot over the past twenty years (4).The total percentage of survival of the patients is 12% (5) for all stages and histo-logical types.

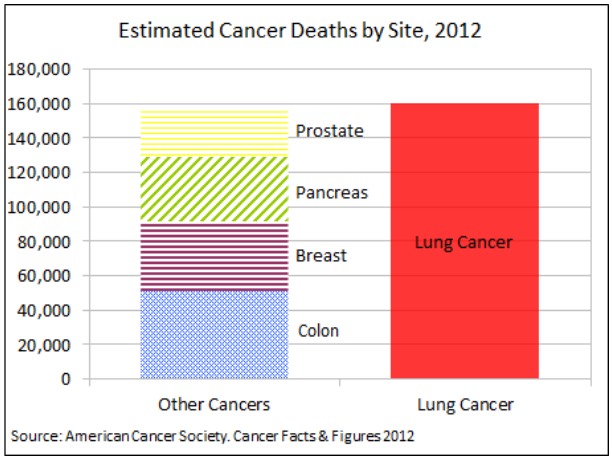


Figure 1. American Cancer Society,Cancer Facts and Figures, 2012. Source: http://www.lung.org/lung-disease/lung-cancer/resources/facts-figures/lung-cancer-fact-sheet.html

Ser Richard Doll, with his claim that smoking is unquestionably the main reason for lung cancer, has entered the history of medicine and has become a medicine classic who has first related smoking to lung cancer (6).

Nowadays, smoking is considered to be the main reason for lung cancer (7). About 90% in men and 78% in women can be related to long-term smoking experience (8). In 1964, an epidemiological research proved this relationship (9) and later on some other epidemiological studies confirmed this fact. The risk for lung cancer increases with the length of smoking experience as well as the number of the cigarettes smoked per day. Most of the people who smoke do not develop lung cancer and also there is a fact that about 10-15% of non-smokers develop this decease (11). That is why some other reasons are taken into consideration, for example, exposure to cigarette smoke, different types of professional cancerogenes or already existing nonmalignant lung diseases (12).

There some other reasons responsible for the developement of the lung cancer such as the external factors and the individual exposure to external agents. In about 90% of the cases, smoking is taken to be the reason, but in about 9-15% of the cases the reason can be the exposure to the cancerogenes at work (occupational exposure). The cigarette smoke contains about 300 harmfull substances, among which there are 40 cancerogenes. It is well known that polyaromatic carbonic hydrogens and nitrozamine-NNK cause damage to the DNA.

The rest of the risk factors are: exposure to radon, asbestos dust, oil derivatives, poluted air, chronical obstructive lung deceases, tuberculosis, genetic predisposition.

It has been estimated that radon is responsible for 2-9% of lung cancer cases in Europe. Its cancerogenic effect multiplies in people who smoke. Some other industrial cancerogenes such as arsenic, asbestos, herbicides, insecticides, and many more agents increase the risk for lung cancer (13). The positive family medical history of lung cancer in the first degree multiplies the risk of this kind of cancer twice (14).

Various studies also suggest that the viruses such as the HPV (human papiloma virus) EBV (Epstein-Barr virus) and also the SV 40 (simian virus) may be responsible for the occurrence of the lung cancer.

According to the World Health Organization (WHO), there are four most frequent histological types which make 96% of all primary neoplasms of the lungs (15). They are: small cells cancer, adenocarcinoma, cancer of the flat cells, and cancer of the big cells. The remaining 5% consist of the carcinoid, cancer of the bronchial glands, and some other rare types of cancer.When other malignant lung tumors are considered, the primary lung lymphoma and sarcoma should be mentioned.

In the process of defining and planning the therapy, because of the clinical and biological characteristics, the cancer of the flat cells, the cancer of glands cells and the cancer of the big cells are taken as a group called the non-small cell lung carcinoma (NSCLC) (16,17). The small cell lung carcinoma (SCLC), according to its speed of developing and metastasizing, is considered to be more agressive and reacts better to chemotheraphy, compared to NSCLC. Therefore, it is taken as a different group of lung cancer.

Aims

The aim of the paper was to certify the occurance of lung cancer in accordance with certain demographic characteristics (sex, age, economic status); to determine the correlations between the occurance of the lung cancer and risk factors (smoking, occupational exposure, non-smokers, passive smokers), and finally to analyze the heredity among the members of the same family.

Material and methods

This is a prospective-retrospective analysis in which 173 patiences with pathological diagnoses of NSCLC and SCLC were included. In the study, all the patients were divided into two groups: operable (117) and inoperable (56). The clinical data taken for each patient related to: age, sex, socio economic status (profession), smoking-nonsmoking status, and the length of the smoking experience (the number of cigarettes smoked daily), location of the tumor, histological type of the tumor. The information about the control group (provisionally healthy patients) was obtained from the questionnaire, voluntarily filled in by the patients in order to qualify the risk factors for lung cancer.

For qualification of the relationship between the risk factors and the frequency of occurance, a crosswise relationship - Oddsratio (OR) 95% CI was calculated. To determine the degree of significance, the value of $p<0,05$ and for highly significant values $p<0,01$ were taken.

Results

In this study the results shown are taken from the elaboration and analysis of the data of 173 examinees who were lung cancer patients.

The sex: In the study 132 (76,3%) male examinees and 41 (23,7%) female examinees were included. The average age of the examinees was 60,2 ± 8,7 years of age, the youngest patient being 31 and the oldest one 75 years old. In the examination group there were 80 (46.25%) pensioners and 59 (34,1%) able-bodied patients acording to the socioeconomic status.

In regard to the smoking/nonsmoking status, the majority of the patients were smokers with more than 20 years of experience; however, with regard to the intensity of smoking we divided the patients into three groups:

1) patients with more than 20 years of smoking experience, smoking more than one pack of cigarettes daily - 49.13%.

2) patients with more than 20 years of smoking experience, smoking only one pack of cigarettes daily -5,78%, and,

3) patients who had been smoking more than 20 years but not continuously -15,61%. The occupational exposure was included in 16,18% of the examinees, and the positive family medical history in 20,81% of examinees.

When analyzing the sex of the patients (Table 2), the largest number - 51(38,64%) of the male patients had the microcelular cancer, whereas in women the adenocarcinoma was registered in more than one half of the examinees – 22 (53,66%). All of the 10 examinees who had adenosquamos carcinoma were men. The described differences in distribution of the pathohistological diagnosis of the lung cancer between men and women were statistically significant (Chi-square=11,37 df=4 p=0,023).

The examinees with different types of lung cancer (Table 3) had a significantly high level of different average age (p=0,0008). On average, the SCLC patients were the youngest. They are much younger than the patients with bronchoalveoral type of cancer (p=0,0017). The examinees who had adenosquamos carcinoma (p=0,009) were the oldest group of patients being 65,30±7,57 years of age.

With a Chi-square test showed that there were highly significant differences among the examinees with different types of cancer regarding the socioeconomic status (Chi- square=49,56 df=8 p=0,000) (Table 1).

Table 1. Distribution of patients with lung cancer by demographic characteristics - IG

N=173	N (%)
Sex	
Men	132(76,3%)
Women	41(23,7%)
Mean age = 60,2 ± 8,7 min=31 max=75	
Socioeconomic status	
Unemployed	34(19,65%)
Employed	59(34,1%)
Retired	80(46,25%)
Smoking habit	
Smoking more than 20 years and more than 1 pack of cigarettes a day	85(49,13%)
Smoking more than 20 years up to 1 pack of cigarettes a day	10(5,78%)
Intermittent smoking more than 20 years	27(15,61%)
Nonsmoker	51(29,48%)
Occupational exposure	
No	145(83,82%)
Yes	28(16,18%)
Heredity	
No	137(79,19%)
Yes	36(20,81%)
NSCLC	157(90,75%)
SCLC	16(9,25%)

The microcellular cancer was commonly found in the group of the unemployed (44.12%), which corresponds to their age. In the group of the employed, the majority had adenocarcinoma - 49,15%, while the planocellular cancer was the most common in pensioners.

The smoking status was significantly highly related to the type of cancer (Chi-square-34,05 df-12 p=0,00067). In the category of the heaviest smokers i.e. those who had more than 20 years of smoking experience and smoked more than one pack of cigarettes per day, 41.18% have adeno-carcinoma, whereas 40% were smokers with planocellular cancer. In the group of smokers who had more than 20 years of smoking experience and smoked less than one pack of cigarettes per day, 30% had adenocarcinoma, planocellular cancer and bronchoalveolar cancer. In the group of smokers with more than 20 years of intermittent smoking experience, in spite of the fact that the most frequent type of carcinoma was adeno-carcinoma - 29,63%, there was a high distribution of the planocellular and adenosquamous carcinoma - 25,93%, while in the group of nonsmokers the adenocarcinoma prevailed - 47.06% (Tabela 2).

The occupational exposure was significantly associated with the occurance of a certain type of cancer (Chi square=14,03 df=4 p=0,007) (Table 4). In the group of examinees who had not been exposed to the risk factors, the adenocarcinoma was the most frequent in 63 patients (43,43%), while in the group of examinees exposed to the risk factors at work (46,43%) there were 13 examinees with planocellular carcinoma. The microcellular type of lung cancer was frequently found among the patients who had not been exposed to the risk factors and the broncho-alveoral type was related to the exposed patients - 6 examinees (21,43%).

Regarding the heredity, using the Chi-square test (Table 5), it was shown that it was highly significantly associated with the type of lung cancer in both groups (Chi-square=11,28 df=4 p=0,02). In the group without any heredity the planocellucar carcinoma was registered (38,69%). The adenocarcinoma was registered in 37,23% of the examinees. In the group of patients with heredity, the adenocarcinoma was the most frequent type (52,78%), whereas the microcellular carcinoma in 22,22% of the cases ranked second.

In order to test the hypoteses about the predictive effect of each of the risk factors, the study included a control group of 131 relatively healthy patients. Table 6 shows the position of the examinees from the experimental and the control group acording to their ages. In both groups, the males prevailed (76,3% vs 75,57%). Therefore, statistically, there were not any differences related to the sex of the patients. Sex was not a significant risk factor for lung cancer occurrence (Chi-square=0,02 df=1 p=0,88).

The average age of the patients with lung cancer was 60,18 ± 8,7 years, which is insigni-ficantly longer than the average age in the relatively healthy patients, which is 58,9±5,7 years of age (p=0,15) (Table 7).

Table 2. Gender distribution in lung cancer

Sex	Type of tumor					Total
	Adenocarcinoma	Planocellular carcinoma	Microcellular carcinoma	Bronchoalveolar carcinoma	Adenosquamous carcinoma	
Men	48(36,36%)	51(38,64%)	12(9,09%)	11(8,33%)	10(7,58%)	132
Women	22(53,66%)	9(21,95%)	8(19,51%)	2(4,88%)	0	41
Total	70	60	20	13	10	173

Pearson Chi-square: 11,36, df=4, p=0,023

Table 3. Types of lung cancer and age of patients

	N	Age(mean±SD)
Adenocarcinoma	70	58,81±9,59
Planocellular carcinima	60	62,73±6,14
Microcellular carcinoma	20	54,65±10,67
Bronchoalveolar carcinoma	13	60,31±6,42
Adenosquamous carcinoma	10	65,30±7,57

Analysis of Variance F=4,99 p=0,0008

Table 4. Type of lung cancer with respect to occupational exposure

Occupational exposure	Type of tumor					Total
	Adenocarcinoma	Planocelular carcinoma	Microcellular carcinom	Bronchoalveolar carcinoma	Adenosquamous carcinoma	
No	63(43,45%)	47(32,41%)	19(13,1%)	7(4,83%)	9(6,21%)	145
Present	7(25%)	13(46,43%)	1(3,57%)	6(21,43%)	1(3,57%)	28
Total	70	60	20	13	10	173

Pearson Chi-square: 14,04, df=4, p=0,007

Table 5. Distribution of certain types of lung cancer and heredity

Heredity	Type of tumor					Total
	Adeno carcinoma	Plano celullar	Mikro celullar	Bronho alveolar	Adeno squamous	
No	51(37,23%)	53(38,69%)	12(8,76%)	12(8,76%)	9(6,57%)	137
Present	19(52,78%)	7(19,44%)	8(22,22%)	1(2,78%)	1(2,78%)	36
Total	70	60	20	13	10	173

Pearson Chi-square: 11,2835, df=4, p=0,02

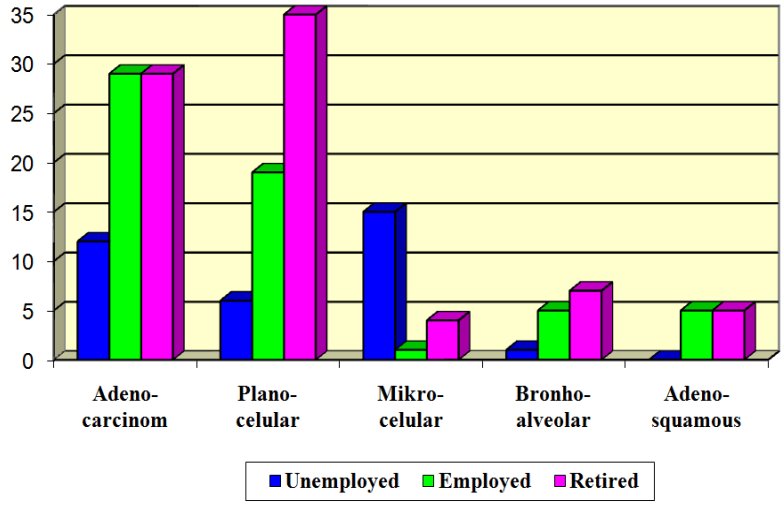
Table 6. Distribution by gender of patients with lung cancer -SG/CG

Sex	SG	CG	Total
Men	132(76,30%)	99(75,57%)	231
Women	41(23,70%)	32(24,43%)	73
Total	173	131	304

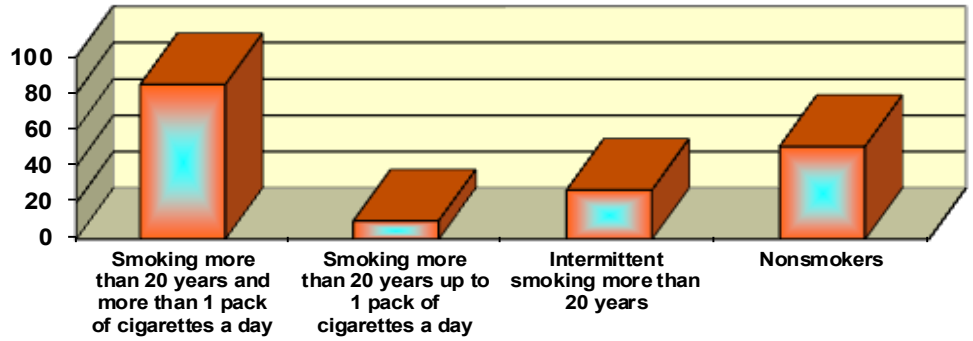
Pearson Chi-square: 0,022, df=1, p=0,88

Table 7. Age distribution of patients with lung cancer -SG/CG

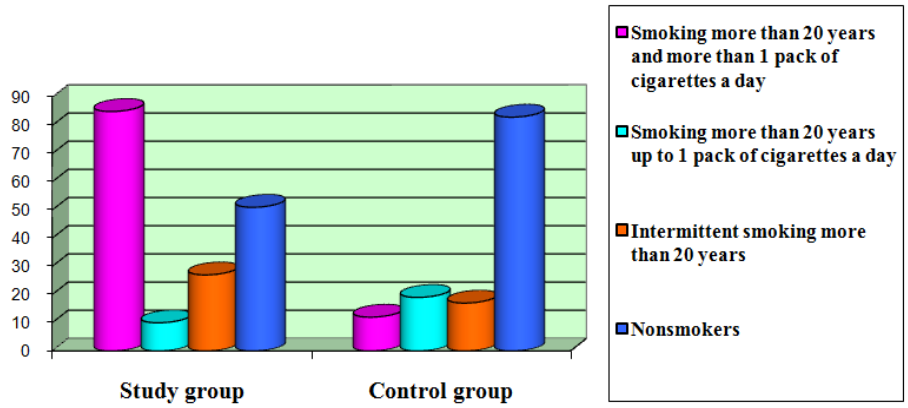
Age(mean±SD)	
SG	CG
60,18±8,7	58,9±5,7
t=1,42 df=302 p=0,15	



Graph.1. Socioeconomic status and lung cancer in operable patients



Graph.2. Smoking habit of patients with lung cancer



Graph. 3. Correlation between smoking and occurrence of lung cancer - SG / CG

Table 8. Correlation between smoking and lung cancer - SG / CG

Smoking	SG	CG	Total
More than one pack of cigarettes per day	85(49,13%)	12(9,16%)	97
Up to one pack a day	10(5,78%)	19(14,50%)	29
Intermittent smoking	27(15,61%)	17(12,98%)	44
Non-smokers	51(29,48%)	83(63,36%)	134
Total	173	131	304

Pearson Chi-square: 63,05, df=3, p=,000000
OR = 11,53 95%CI (5,48-24,71)

Table 9. Occupational exposure and lung cancer -SG/CG

Occupational exposure	SG	CG	Total
Absent	145(83,82%)	114(87,02%)	259
Present	28(16,18%)	17(12,98%)	45
Total	173	131	304

Pearson Chi-square: 0,61, df=1, p=0,43

Table 10. Heredity and lung cancer - SG / CG

Heredity	SG	CG	Total
Negative	137(79,19%)	117(89,31%)	251
Positive	36(20,81%)	14(10,69%)	53
Total	173	131	304

Pearson Chi-square: 5,56, df=1, p=0,02OR = 2,2 95%CI (1,08-4,51)

In our study, regarding the smoking habit and the length of the smoking experience, 49% of the examinees with lung cancer smoked more than a pack of cigarettes daily and had more than 20 years of smoking experience, compared to 9,16% examinees in the control group with such evidence. Non-smokers accounted for 29,48% in the examination group compared to 63,36% in the control group. The difference in distribution of the patients tested in the examined and the control group, concerning the smoking experience status, proved to be highly significant (Chi-square=63,04 df=3 p=0,000) (Table 8).

In smokers who smoked more than one pack of cigarettes daily and had more than 20 years of smoking experience, the chance of developing lung cancer was 11.53 times or 95% CI (5,48-24,71) higher than the in non-smokers (Graph 3).

The occupational exposure to the risk factors was present in 16,18% of examinees in the group of patients, and in 12,98 % of cases in the control group of healthy paeople. The difference in the distribution of the professional exposure (Table 9) depending on the health status is not clear enough to be statistically confirmed (Chi-square=0,61 df=1 p=0,44).

Heredity significantly increases (2,2 times) the chance of developing the lung cancer (1,08-4,45). In our study the positive family history was present in 20,81% of examinees in the examination group and 10,69% in the healthy control group. Table 10 shows the distribution of the examinees with or without heredity risk factors irrespective of their their health status.

Discussion

This study analyses the results of 173 examinees from the examination group and 131 examinees from the control group. The basic aim of this survey was to show the differences in the examination group, regarding the demographic characteristics such as age, sex, socioeconomic status and the effect of certain risk factors, such as smoking experience and its length, the occupational exposure to risk factors as well as the heredity as a risk factor for the lung cancer occurance. The final results were that the average age of the examinees was 60,2±8,7 years , the youngest patient being 31 and the oldest one 75 years old (Table 1). The pensioners in the socioeconomic structure make 46,25% and the able-bodied examinees make 34,1%. Two thirds of the fatal cases among smokers are significantly associated with their smoking habit, whereas smoking shortens the length of life by 10 years, according to one very detailed study (18,19). Smoking is a well-known risk factor for chronic obstructive lung deceases (HOBP), cardiovascular deceases and certain types of cancer, especially the lung cancer. The cigarette smoke contains about 300 harmfull substances, out of which 40 are well-known cancer-causing substances. That is why the intensity of smoking (number of packs/year of experience) is the main variability affecting the obstruction in the respiratory system in smokers, which caused more serious decreasing of the PEF.

The study of more than 200.000 Australians (22) shows that this habit is directly related to two thirds of fatal cases among smokers, which is much more than the previous estimation of 50 %.

A four-year-long analysis of medical data in a study called „45 and the older ones" at Sax University shows that even the moderate smoking is a silent murderer. "We all know that smoking harms the health, bu so far we haven't had a direct evidence on an example in Australia which tells us how bad the situation is."- says the main author of the study, professor Emily Benks, the scientific director of the study (23). "So far, we have been basing our knowledge on the other countries' data." This study, which was supported by the National Association for Heart Deceases in cooperation with the Council for Cancer Deceases in New South Wales (24) shows an increase of the risk associated with the increase in the number of cigarettes smoked on a daily basis.The risk for death doubles even in the smokers with

an average number of 10 cigarettes per day according to the co-author of the study, professor Fredy Citas from the Council for Cancer Deceases in New South Wales. The good news according to professor Benks is that quitting smoking at any age decreases this risk (25).

Smoking is the leading risk factor for death in Australia with 15.000 year rate according to dr.Robb Grenfel from the National Association for Heart Deceases who also worked on this study.

"The people must understand that smoking is a dangerous activity" - he says "There isn't a safe level of smoking or smoking in social occasions." (26)

The most frequent risk factor regarding the occupational exposure is exposure to asbestus (27). It is also certified that exposure to radon is related to 10% of the cases with lung cancer while the air polution is related to about 1-2% of the cases. At the same time, the risk of developing lung cancer increases in the cases with pre-existing nonmalignant lung deceases such as chronical obstructive lung decease, idiopatic lung fibrose and tuberculosis. A pilot sudy concerning the exposure to the chemical agents in French workers (28) confirms that the exposure to the risk factors multiplies the morbidity caused by lung cancer. The difference in professional distribution in both groups in this study, concerning the health status, was not high enough to be statistically verified.

In our study the occupational exposure to risk factors was not conformed to be a significant factor for developing lung cancer (Table 8). It can be probably explained with the fact that all the patients were randomly selected.

The tobacco and the low socioe-conomic status are the two recognized potential factors for respiratory deceases in North America including the lung cancer. With respect to decreasing the prevelance of smoking in adult men (more than 50%) in the last few decades in Canada (29,30), there is a study which explains that in the period between 1986-2001 the propaganda against smoking and smoking reduction in Canada resulted in decreasing the number of lung cancer cases in adult men between 35-69 years of age in all social classes.

A comparative–retrospective study in the USA (31) including the Hispanic Americans and the white Americans, (with reference to their socioeconomic status, genetic origine and ethnicity), points out that the socioeconomic factor has stronger effect on developing the lung cancer compared to the genetic origine and ethnicity of the individuals and the group.

In a study in Canada (32) published in CANCER, an on-line magazine of the American Cancer Society, by Christifer Booth, MD, FRCPC from the Queen's University Cancer Research Institute in Ontario, Canada, the researchers studied some minor changes in the level of the lung cancer developement immediately after being diagnosed in different socioeconomic groups and compared the data with those available in the literature. "It is probable that the lack of strong relation between the disease stage and the socioeconomic status in our study is in strong relationship with the universal health insurance in Ontario which makes the primary health insurance and the cancer tests available to everyone." - says dr.Booth (33).

The environment, cigarette smoke and occupational exposure can be very significant risk factors (34,35). The lung cancer in non-smokers (36) seems to be a separate entity,compared to the lung cancer in smokers with specific characteristics ,such as the moleculs of EGFR mutations (19, 37).

Although most of the cases are related to smoking experience, the fact that not all the smokers have developed the lung cancer demonstrates that there are other certain reasons for that, such as genetic predisposition, which can have an important role in lung cancer development. Numerous studies have shown that lung cancer is more frequent in smokers as well as in non-smokers who have positive family anamnesis. Recently, a large study on genetical lung cancer reseach has been carried out. It included more than 10.000 people in 18 countries and was made by the International Agency for cancer researching (IARC). A small region in the genome (DNA) has been identified, which contains the genes that increase the sensitivity to the lung cancer in smokers. These specific genes, which are on the short („q") arm of the chromosome 15, code proteins who come into interaction with the nicotine and the other toxines from the cigarette smoke (the genes for nicotine acetylholin receptors) (38,39).

The data related to heredity is variable, as well as the persentage, so that in some studies the persentage is 11%, while in others it reaches 51% (40,41). This points out that heredity is still a significant risk factor for developing lung cancer,and the variations are associated with population example.

Conclusion

The analyzed demographic characteristics of the patients (factors like socioeconomic status, smoking experience and heredity) were confirmed to be statistically highly significant for developing lung cancer. In our study, the occupational exposure was not proved to be a significant factor associated with lung cancer development, which cannot be explained with the fact that all the patients were chosen randomly.

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DEMOGRAFSKE KARAKTERISTIKE BOLESNIKA SA KARCINOMOM PLUĆA

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Rak pluća je u svetu najčešća maligna bolest kod muškaraca, dok se kod žena nalazi na drugom mestu. Istovremeno je vodeći uzrok smrti među svim karcinomima. Danas se pušenje smatra najvažnijim uzrokom karcinoma pluća. Oko 90% karcinoma pluća kod muškaraca i 78% karcinoma pluća kod žena može se povezati sa dugogodišnjim pušenjem.

Prospektivno-retrospektivna studija, u koju je uključeno 173 bolesnika sa patohistološki potvrđenim NSCLC i SCLC. U interesu studije, a za olakšanje statističke analize, sve bolesnike podelili smo u dve grupe: operabilni (117) i inoperabilni (56). Za kvantifikovanje povezanosti određenih faktora rizika i učestalosti karcinoma pluća izračunat je unakrsni odnos – Odds ratio (OR) 95% CI. Za određivanje nivoa signifikantnosti uzeta je vrednost $p<0,05$, a za visoku signifikantnost vrednost $p<0,01$.

Prosečna starost ispitanika bila je 60,2 ± 8,7 godina, najmlađi bolesnik u studijskoj populaciji imao je 31 godinu, a najstariji 75 godina. Prema društveno-ekonomskom statusu penzioneri čine 80 ispitanika ili 46.25%, a za rad sposobnu grupu sačinjavaju 59 ispitanika ili 34,1 %. U pogledu statusa pušenja, većina su pušači, dužina pušačkog staža je iznad 20 godina, a u vezi sa intenzitetom pušenja ispitanici su podeljeni u tri grupe: grupa pušača sa više od 20 godina pušačkog staža i više od jedne kutije cigareta dnevno – 49.13%, pušači sa više od 20 godina pušačkog staža i jedne kutije cigareta dnevno – 5,78%, grupa pušača koji puše više od 20 godina, ali ne u kontinuitetu – 15,61%. Profesionalna eksponiranost je zastupljena kod 16,18 % ispitanika, dok je pozitivna porodična istorija prisutna kod 20,81 % ispitanika. Primenjujući Hi-kvadrat test, pokazali smo da hereditet ima visoku signifikantnu povezanost sa tipom karcinoma koji se javlja u obe grupe.

Ispitivane demografske karakteristike pokazale su visoku statističku signifikantnost u odnosu na karcinom pluća. *Acta Medica Medianae 2014;53(2):40-48.*

Ključne reči: *uzrast, pušenje, socioekonomski status, profesionalna eksponiranost, hereditet*

