Assessment of Risk Factors of Lung Cancer Patients in Babylon Governorate ,Iraq

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Abstract

Background: Lung cancer is one of the most common and serious types of cancer. Cigarette smoking is the main cause of lung cancer.The aims of this study was therefore to assess the risk factors of lung cancer patients in Babylon governorate including tobacco smoking , family history, and occupational exposures, measurement of radon gas in the bed room of patients with lung cancer. **Patients and Methods:** A case – control study was conducted in Babylon oncology center , Murjan medical city during the period from 8th of may to 2nd of september 2019. This center received all lung cancer patients in Babylon governorate. **Results:** The study showed that 43.3% of cases were in the age groups 60- 69 years**.** Males constitute 69.5 % of cases, seventy one percentage of cases were residing in a rural area. Smoking is the main risk factors of lung cancer in 75.8% , the risk of lung cancer in current smoker is three times more than that of non smoker .Those who had a family history of lung cancer constitute 8.3% ,of them 3.9% were first degree and 4.4% were second degree ,there was a significant association between lung cancer patients and first degree family history with lung cancer .Those who had a family history of other cancer was 23.6 % .The risk factors include radon exposure, asbestose, beryllium ,cadmium and diesel exposure were significant associated with lung cancer . The radon value in (77) patients of lung cancer were within exceptable limit.**Conclusion :** This study revealed that males, age group 60 and above, rural area and smoking is the main risk factors of lung cancer in Babylon city.There is highly significant association between smoking habits and lung cancer cases p-value<0.05.

Key words: *Risk factors , Lung cancer, Radon exposure, Smoking in lung cancer.*

Introduction

Lung cancer is the most common cause of cancer death in men and the second in women after breast cancer [1] .There are two main types of lung cancer small-cell lung carcinoma(SCLC) and non-small-cell lung carcinoma(NSCLC).The most common symptoms are coughing(including coughing up blood),weight loss, shortness of breath, and chest pains[2].

The risk factors of lung cancer is a multifactorial ,that is many factors work together to cause lung cancer. Globally, risk factors of developing lung cancer include smoking ,exposure to radon gas, asbestos, radioactive ores such as uranium, inhaled chemicals or minerals like, beryllium,cadmium,chromium compounds,diesel exhaust, air pollution.Family history of lung cancer increases its risk. The debilitated patients with compromised immune system and elderly over the age of 65 years are more prone to the disease [3]. In the USA in 2019 there were about 228,150 new cases of lung cancer 116,440 in men and 111,710 in women , and 142,670 deaths from lung cancer 76,650 in men and 66,020 in women[4]. Each year, more people die of lungcancer than of colon, breast, and prostate cancers combined[4]. The problem of tobacco smoking in Iraq associated with the social and cultural environment, which encourages smoking and influence an individual's attitude toward cigarette smoking [5]. Tobacco smoking is responsible for the majority of lung cancer cases, cigarette smoking is the cause of approximately 90% of lung cancer deaths [6]. Another study reported that lung cancer killed approximately1,590,000 persons in2012[7].The primary

risk factor for lung cancer development and the leading cause of preventable death [8].

Patients and Methods

Babylon governorate located in the middle of Iraq is about 100 , kilometers south Baghdad city and has an area of 5,119 Square Kilometers, and population of 1.931.700 people in 2014.

A case – control study was conducted on patients attended Murjan medical city , Babylon oncology center throughout the period from 8th of may to 2nd of september 2019 .

Sampling : convenient sample that including all a available patients .

Case: was diagnosed by specialist and referred to the center .

Controls: were age and sex matched .

First degree of family history is defined as a family member who shares about 50% of their genes with a particular individual in a family , first degree relatives include parents, offspring and siblings[9] .Second degree defined as someone who shares 25% of persons genes, it includes uncles, aunts, nephews, nieces, grandparents, grandchildren, half- siblings, and double cousins[10]. Current smokers: is ever smokers who are still smoking at the time of the interview[11].Its including Number of cigarettes smoking per day , and age at beginning of cigarette smoking in years and duration of smoking , number of cigarettes smoking per day [11] .

Data collection technique :

Data for lung cancer patients risk factors were collected by direct observation using a structured questionnaire after reviewing previous studies.The questionnaire consists of demographic characteristics of patients, risk factors include(smoking, radon ,family history, first degree of family history is defined as a family member who shares about 50% of their genes with a particular individual in a family , first degree relatives include parents, offspring and siblings [9] .Second degree defined as someone who shares 25% of persons genes, it includes uncles,aunts,nephews, nieces, grandparents, grandchildren, half- siblings, and double cousins[10] .

Measurement of radon : Radon gas was measured in bed rooms of patients, in cooperation with Babylon environment directorate by using alphaguard professional radon monitor ,a modern device used to examine radiation and especially to measure the value of radon gas, normal value of radon is 100Bq/M^3 according to(WHO)[12].

Statistical Method

Data were presented in simple measures of frequency, percentage , mean, standard deviation, and range(minimum- maximum values).The significance of difference of different means (quantitative data) , and odd ratio, confidence interval around odd ratio [13] .

Statistical analysis :

Data analysis was carried out by using the Statistical Package for Social Science (SPSS/ version 25). **Finding:** A total of 203 cases were include in the study :

Table 1 : Family history of cancer among cases and controls.

Variables		(Cases)		Controls		OR	95% C.I	P-value
		No.	%	No.	%			
Family History of Lung Cancer	First degree	8	3.9	-	-	8.69	0.08-70.03	_
	Second degree	9	4.4	1	0.5	9.77	1.23-77.89	0.009

Cont... **Table 1 : Family history of cancer among cases and controls.**

No family history		186	91.6	202	99.5	Reference	Reference	_
Family History of other Cancer	First degree	8	3.9	3	1.47	3.23	0.84-12.40	0.071
	Second degree	40	19.7	12	5.9	4.04	2.05-7.98	0.0001
No family history	-	155	76.4	188	92.6	Reference	Reference	_

Table 1 showed that 8.3 % of lung cancer patients had a family history of lung cancer of which first degree were 3.9 % , and second degree were 4.4 % .The percentage of lung cancer who had a family history of other cancer was 23.6% of which 3.9% were first degree and 19.7% were second degree.

Table 2 : Association of smoking with lung cancer .

Smoking Habits	**Lung Cancer (cases) 203**		**Controls 203**		**OR**	**95%C.I**	**P.value.**
	No.	**%**	**No.**	**%**			
Current smoker	154	75.8	140	69	3.07	0.65 -2.47	0.496
Passive smoker	32	15.7	42	20.7	0.94	0.43-2.07	
Not smoker	17	8.5	21	10.3	Reference	Reference	

In table 2 showed that 75.8% of lung cancer patients were current smoker .The risk of lung cancer in current smoker is 3 times more than in the non smoker .

Table 3 : Association of other risk factors with lung cancer in the studied sample.

Risk factors and duration of exposure	**Lung cancer (Cases) 203**		**Controls 203**		**OR**	**95%C.I**	**P- value**
	No.	**%**	**No.**	**%**			
Asbestose exposure	25	12.3	8	3.9	3.42	1.51-7.79	0.002
Duration (years)	13.8± 6.9 (2 - 33)		12.6± 2.4 (9- 17)		0.628		
Beryllium exposure	46	22.7	18	8.9	3.01	1.68-5.41	0.0001
Duration (years)	16.6± 5.8(7 -29)		18.9± 7 (11- 32)		0.177		
Cadmium exposure	11	5.4	2	1	5.76	1.26-26.32	0.011
Duration (years)	9.5± 3.4 (3 - 14)		8.5 ± 4.9(5- 12)				
Chromium exposure	9	4.4	4	2	2.31	0.70-7.62	0.159
Duration (years)	12.1 ± 6.6 (5 -28)		12.8 ± 1.3(11- 14)		0.855		
Diesel exposure	27	13.3	7	3.4	4.30	1.83-10.11	0.0001
Duration (years)	9.8 ± 5.2(3 -27)		7.9 ± 2.9 (4 - 12)		0.361		
Others *	31`	15.3	26	12.8	1.23	0.70- 2.15	0.475
Duration (years)	14 ± 11.2 (2-52)		12.5 ± 7.1(4 -34)		0.558		

***** Others include those who were works in brick factories ,spray pesticide and chemicals , exposure to agricultural chemical wastes, individuals that presence in area of asphalt plant and generators worker.

Table 3: Showed that (22.7 % , 13.3% , 12.3 % and 5.4 %) were exposed to (beryllium ,diesel exhaust ,asbestose and cadmium) respectively , and the association were significant .

Figure 1:This figure showed the radon value in (77) patients of lung cancer. All values of radon were within exceptable limit .The duration of exposure 21.2±6 range (5 - 32) P.value 0.0001.

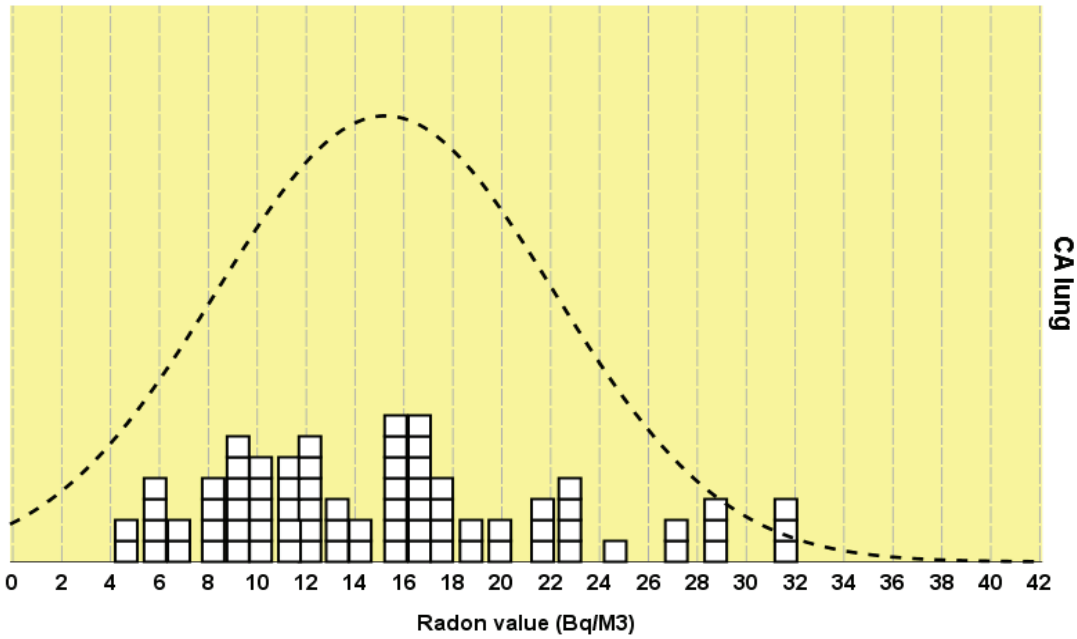

Figure 1 : Distribution of radon value of lung cancer patients .

Discussion

Regarding the age , the results of this study demonstrated highest percentage (43.3%) of cases in age group (60 – 69)years.

Higher percentage of males 69.5 % had lung cancer. This study agrreed with others studies that showed: increase risk of lung cancer in smoking persons more than non-smokers, and in male more than females and in the age groups (50 years and above) [14,15] . This may be due to higher percentage of smoking in males , passive smoking , type of occupational exposure and other risk factors are more in the males than in the females.This study demonstrated the risk of lung cancer in the current smoker were three times more than non smokers, which was supported by other studies, that indicated that cigarette smoking plays an important risk factor in the occurrence of lung cancer [16].The current study revealed that 71.4% of cases were living in rural area, which agreed with the study of Stamm *et al.,*2007, which found that lung cancer was more in rural area than in urban area .[17]

This showed that the 22.7 % , 13.3% , and 12.3 %, there was a significant between lung cancer and exposed to beryllium , diesel exhaust and asbestose . The results agreed with others studies . These studies found that occupational exposure including radon exposure, and asbestos, beryllium, cadmium, chromium, diesel exhaust are constitutes a leading risk factors for lung cancer according to the type of occupation[18,19] .There was a significant association between lung cancer patients and first degree family history lung cancer .Lung cancer patients had 8.7 times more family history of first degree patients with lung cancer. That was in agreement with a study that found brothers, sisters, and children of people who have had lung cancer may have a slightly higher risk of lung cancer themselves, especially if the relative was diagnosed at a younger age. It's not clear how much of this risk might be due to shared genes among family members. [20].

There were many limitations for this study . Firstly : The sample was convenient which included all available cases at the time of the study ,so we not able to include all cases .

Secondly : Measurement of radon was done for (77) patients only , which not reflect the total exposure for all patients . This because there was only one radon gas measurement device available in the directorate of environment of Babylon , and the far distance between houses of patients .

Conclusion

This study revealed that males, age group 60 and above, rural area and smoking is the main risk factors of lung cancer in Babylon city .There is highly significant association between smoking habits and lung cancer cases p-value<0.05.

Conflict of Interest : none

Source of Funding : self

Ethical Clearance : From patients and babel health directorate and my college .

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