(RESEARCH ARTICLE)

Lung cancer – statistical analysis data in a 5 year period in Strumica, Republic of North Macedonia

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Abstract

The lung carcinoma occurs when the cells of healthy lung tissue begin with uncontrolled structural proliferation and form a tumor formation in the lungs. For the purposes of this paper was used data from the Center for Public Health – Strumica, Republic of Northern Macedonia in the period of 2013 to 2017 ie within 5 years. The results show that in Strumica, for a period of five years, the total number of people diagnosed with lung cancer is 265. According the results in 2014 and 2015 the number of diagnosed patients is increasing and in 2016 and 2017 the number of patients is declining. 80% are male patients and 20% female. The most diagnosed patients with lung cancer in Strumica are on age from 59 to 65. The youngest patient with lung cancer is at the age of 24 and the oldest is at the age of 89. From the analysis of the Institute of Public Health, the highest rate of lung cancer mortality is in 2016 ie 43.5 % and the lowest mortality rate has in 2015 with 40.6%. In the Republic of Macedonia the number of patients with lung cancer is increasing. At the last few years the number of new cases per year is over 900 patients. Globally, lung cancer is a very common phenomenon that continues to increase.

1. Introduction

The classification of lung carcinomas is according to the size and appearance of malignant cells, under a microscope. Therefore they are classified into two general classes: non-small cell and small cell lung cancer. The spectrum of carcinogenic agents that can lead to the induction of cellular changes and malignant transformation is very wide. Lung cancer accounts for 12–16% of the total percentage of malignant diseases.

Smoking is number one and the most important risk factor, while nonsmokers account for 15% of lung cancer cases, the disease is often attributed to a combination of genetic factors, asbestos exposure, radon, air pollution, diet and passive smoking. Lung carcinomas are the second leading cause of death in the male population and the third leading cause of death in the female population according to World Health Organization data.

Non-small cell carcinoma is the most common and accounts for 75% of all lung cancers. There are three main types of non-small cell carcinoma: adenocarcinoma, squamous cell carcinoma, and large-cell anaplastic lung cancer. Five-year survival in all patients is 10-13%, in patients treated exclusively surgically it is 55-65%. Non-small cell lung carcinoma has a worse prognosis because it metastasizes early. This cancer grows rapidly and spreads early in the course of the disease, 60-70% have metastatic disease at the moment of detection. Two-year survival is 20% and five-year survival is less than 5%.

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Signs and symptoms in patients with lung cancer depend on the tumor histology and the extent of local-regional tumor invasion, as well as the location, size, and number of distant metastases. Most patients manifest asymptomatic lesions discovered accidentally by chest radiograph or by computed tomography scan. The tumors that appear in the bronchi cause resistant cough, heavy breathing or hemoptysis. Tumors that occupy the chest walls usually produce severe radicular pain or burning pain, with or without pleural effusion. More than 80% of people visiting a doctor, complain of fatigue and reduced activity, and most patients also suffer from cough, dyspnea, anorexia and weight loss. Many symptoms in these patients require urgent treatment of the underlying malignancy, as well as palliation of symptoms while definitive therapy is given.

Depending on the histologic type and the stage of the disease, the therapeutic approach may be surgical, radiological, and chemotherapeutic. Most often these methods are combined. Surgery is the primary treatment for undiagnosed non-small cell carcinoma (to 25% of the cases): resection of the pulmonary lobe or entire lung wing. In case of loco-regional dissemination (25%) the patient is indicated with a treatment that combines all forms of therapy. In disseminated disease (50%) first-line chemotherapy is indicated as a combination of two cytostatics, and if the disease progresses further, a second line of chemotherapy is given. Primary treatment for small cell carcinoma, confined to the thoracic region, is chemotherapy. Only in a small number of patients can surgical therapy be combined with other therapy. Patients with disseminated disease are treated only with chemotherapy. Prophylactic brain radiotherapy is administered to patients who have achieved an almost complete response to primary therapy and Symptomatic therapy for patients with bronchial cancer. [1-6].

2. Material and methods

The global increase in the incidence of lung cancer and the risk of mortality has defined the aim of this study. To obtain the results, were analyzed a large number of registered cases of lung cancer and the number of deaths of patients with lung cancer.

The working methods used are:

- Data from the Strumica Public Health Center for the period 2013-2017.
- Data from the Institute of Public Health of the Republic of Macedonia for the period 2013-2016.

The results are processed in detail, analyzed and statistically presented in the paper in tables, graphs, and imagese.

3. Results and discussion

Table 1 Number of patients diagnosed with lung cancer in Strumica in 2013, 2014, 2015, 2016 and 2017

Year	Total number of patients
2013	53
2014	57
2015	67
2016	44
2017	44

In Strumica for a period of five years a total of 265 people were diagnosed with lung cancer. At the Center for Public Health in Strumica in 2013 were diagnosed 53 patients, in 2014 - 57 patients, in 2015 - 67 patients, in 2016- 44 patients and in 2017 - 44 patients. In 2014 and 2015 the number of diagnosed patients is increased, while in 2016 and 2017 the number decreased. Of the total number, 20% were diagnosed in 2013, 21% were diagnosed in 2014, 25% were diagnosed in 2015, in 2016 were diagnosed 17%, and in 2017 17% were diagnosed with lung cancer.
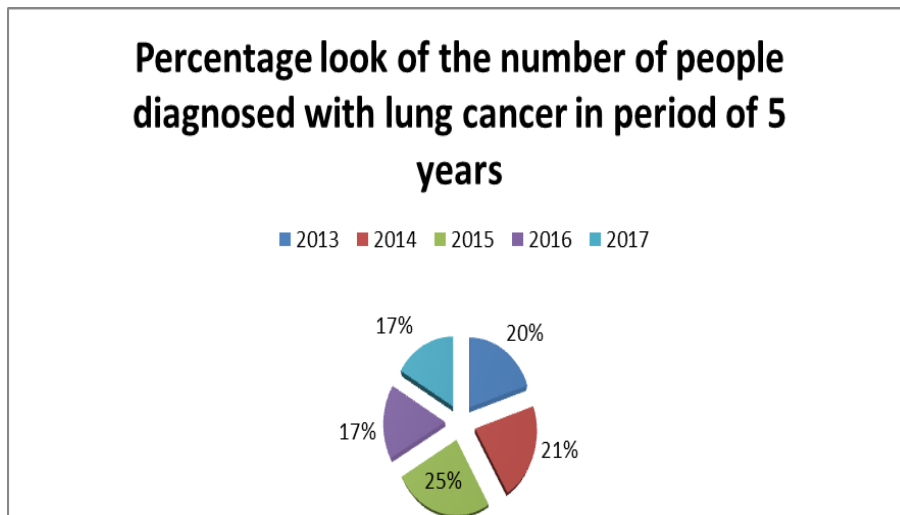
Figure 1 Percentage look of the number of people diagnosed with lung cancer per year in Strumica in 2013, 2014, 2015, 2016 and 2017 year.

Table 2 Number of diagnosed people with lung cancer by gender in Strumica in 2013, 2014, 2015, 2016 and 2017 year

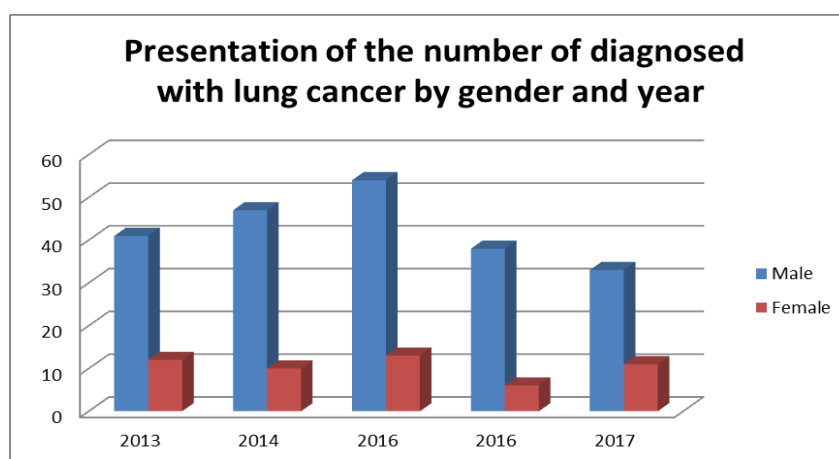| Year	Gender	
	Male	**Female**
2013	41	12
2014	47	10
2015	54	13
2016	38	06
2017	33	11

Figure 2 Presentation of the number of diagnosed with lung cancer by sex in Strumica in 2013, 2014, 2015, 2016 and 2017 year

According to the data obtained, from the ratio of males to females diagnosed with lung cancer, we can notice that the prevalence of lung cancer during the five years is higher in males. The number of males affected is significantly higher, totaling 213 ie 80%, in contrast to the total number of female patients that is 52 ie 20%.
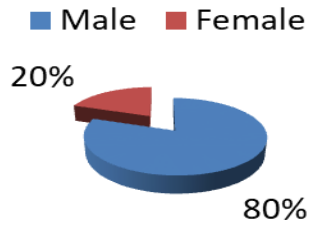

Figure 3 Percentage look of lung cancer by sex in period of five years in Strumica

Table 3 Number of diagnosed women with lung cancer by age in Strumica in period of five years

Age	Number of women diagnosed with lung cancer
25-31	1
32-38	1
39-45	1
46-52	5
53-59	13
60-66	13
67-73	11
74-80	3
81-82	4

Table 4 Number of diagnosed men with lung cancer by age in Strumica in period of five years.

Age	Number of men diagnosed with lung cancer
24-30	2
31-37	1
38-44	4
45-51	5
52-58	49
59-65	61
66-72	53
73-79	21
80-86	11
87-89	6

From the above shown we can conclude that most diagnosed with lung cancer are patients aged 53-59 and 60-66, concretely 13 patients or 25%. The youngest diagnosed patient is 25 years old, while the oldest patient is 82 years old.

In table no. 4 is shown the number of men diagnosed by age, with lung cancer in Strumica for five years, data taken from the Strumica Center for Public Health. From the above we can conclude that most diagnosed men with lung cancer are on age of 59-65, precisely 61 patients or 29%.The youngest patient is 24 years old, while the oldest patient is 89 years old.
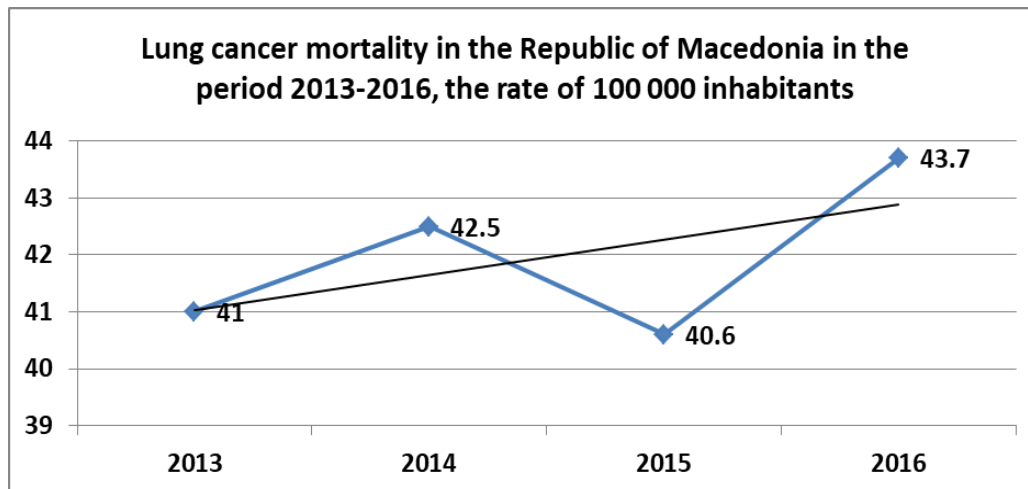

Figure 4 Lung cancer mortality in the Republic of Macedonia in the period 2013-2016, the rate of 100 000 inhabitants.

Chart 4 shows the mortality rate of lung cancer in the Republic of North Macedonia for a period of four years, ie in the period from 2013 to 2016. Data are taken from the Institute of Public Health of the Republic of North Macedonia in Skopje. According to the data shown, the highest mortality rate from lung cancer was in 2016, ie 43.7%, then in 2014 with 42.5%, in 2013 with 40%, and the lowest mortality rate in 2015 with 40.6%.

4. Conclusion

Lung cancer is one of the most common and deadly malignancies worldwide. Global increase in lung cancer incidence combined with the fact that the overall five-year survival of patients with this disease is less than 15%, highlights the magnitude of the lung cancer epidemic. The incidence of lung cancer in the Republic of North Macedonia is relatively high, and with more frequent representation of men. Also a huge problem in the country is the late diagnosis of lung cancer and the aggravated treatment. It is therefore necessary to recognize the severity of the disease and to treat it appropriately.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that there is no conflict of interest.

References

[1]   DeVita T, et al. (2001). DeVita, Hellman, and Rosenberg's Cancer: Principles & Practice of Oncology; 6th edition.

[2]   Gunderson L and Tepper J. (2016). Clinical Radiation Oncology 4th Edition; Elsevier.

[3]   Reckamp LK. (2016). Lung cancer -Treatment and Research.

[4]   Ministry of Health of Republic of Macedonia; Lung cancer; Skopje. (2015).

[5]   Cagle PT. (2012). Molecular Pathology of Lung Cancer.

[6]   Frank C and Detterbeck et al. (2001). Diagnosis and Treatment of Lung Cancer: An Evidence-Based Guide for the Practicing Clinician; Saunders.

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