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**Pulmonary Cancer**

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**Pulmonary Cancer**

**ABSTRACT**

Lung cancer is the biggest killer cancer in Europe and worldwide. The main cause of lung cancer is smoking but other causes are not excluded. Treatment of lung cancer is done with surgery, radiotherapy, and chemotherapy. The best method to prevent lung cancer is to stop smoking and see a doctor as soon as you have a problem of the respiratory system, because many symptoms of lung cancer are the same as those of other broncho-pulmonary diseases. The purpose of the study is to get acquainted with patients with lung cancer, geographical distribution, age groups and the most affected gender, problems associated with lung cancer, examination and treatment methods, etc. While concerning age groups we could also study the way and lifestyles. By carefully studying all of these it would be easier to enable the best way to prevent the onset of lung cancer. It has been studied based on the data of the registers of Durrës Regional Hospital. For this, the patient registers for the years studied have been used. This study is retrospective. The purpose of studying these statistics is to accurately assess the problems of lung cancer. The number of patients taken in the study is 60. From the studies conducted it is noticed that from year to year the incidence of lung cancer is increasing, this is noticed not only in men but also in women. This phenomenon is more pronounced in urban areas.

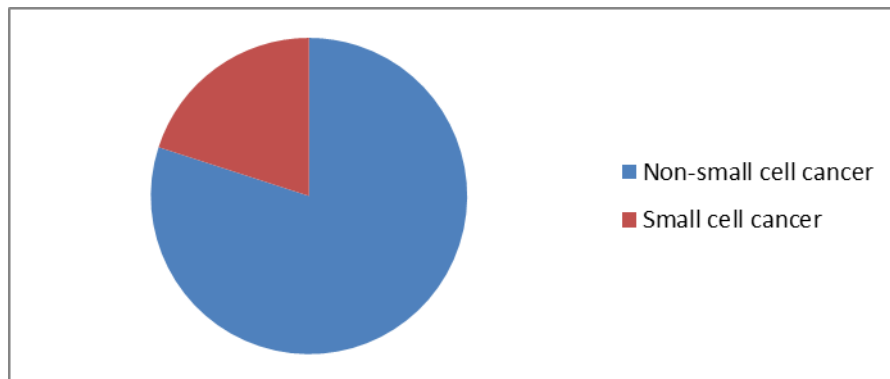
**Keywords:** cancer, malignant, benign, stroma, carcinoma

## **Pulmonary Cancer**

The term lung cancer defines malignant neoplasms that originate from the constituent structures of the lung. Several types of lung cancer are known depending on how it develops, but there is a general division that classifies cancers into two types:

A- Small cell lung cancer (microcytoma), which occurs in 20% of cases and is considered one of the most dangerous forms. Generally, at the time of diagnosis, the possibility of having metastasized is very high. This type develops quickly and the possibility of surgical treatment is almost impossible, more often for its treatment doctors prefer combinations of chemotherapy with radiotherapy.

B- Non-small cell lung cancer involving all other subtypes of lung cancer. It occurs in 80% of cases, develops more slowly and the possibilities of its treatment are more comfortable.



## **Epidemiology of Lung Cancer**

Lung cancer is the most common cause of cancer deaths, responsible for 1/3 of cancer-related deaths in both men and women. More than 220,000 individuals were diagnosed with lung cancer in the United States in 2010. The incidence of cancer peaked in the 1980s, and an increase in incidence was also observed in women. Lung cancer is rare under the age of 40, and the risk of developing cancer increases with age. The probability of developing cancer is 8% for men and 6% for women. The incidence of cancer varies by race and ethnic group, with a higher incidence among African Americans. The lung cancer mortality index has been on the rise especially in developing countries, however, in recent years it seems to have declined slightly in America and Canada. Although the incidence in men is decreasing, there is a steady increase in the incidence of non-small cell lung cancer in relatively young non-smoking women.

*Etiology of Lung Cancer*<sup>1</sup>

**A- Smoking:** Unlike other types of cancer, the causes of which are often unknown, the leading cause of lung cancer is smoking. The correlation between them (smoking and cancer) was discovered in 1950. Cigarettes are known to consist of tobacco, paper, filter and some additional materials.

**B- Exposure to Radium:** Radium can penetrate homes through cracks in foundations, basements and can reach high levels in low-ventilated, indoor homes. The inspiration of large amounts of radium gas damages respiratory cells. Exposure to radium increases the risk of lung cancer. Radium is the leading cause of lung cancer in non-smokers and the second leading cause in smokers. The risk of developing radium cancer depends on:

- a) the amount of radium
- b) time of exposure to radium
- c) is a smoker or not.

People who smoke and are exposed to radium have a much higher risk of developing cancer than people who do not smoke.

**C- Exposure to Asbestos:** Increases the risk of lung cancer 9 times more than a person who is not exposed to asbestos. The risk of asbestos exposure is high in those working in construction. The combination of smoking and asbestos exposure increases the risk of lung cancer by 90 times. Another cancer known as mesothelioma is closely related to asbestos exposure

**D- Chronic Lung Diseases:** Such as tuberculosis or chronic obstructive pulmonary disease (COPD) are also risk factors for lung cancer. A person with COPD has a 4-6 times higher risk than a healthy individual, even if the patient does not smoke and there are no other risk factors for this disease.

**E- Occupational Exposure to Carcinogenic Chemicals:** The risk of lung cancer is increased in people who work in certain industries. Chemicals that increase the risk of lung cancer are:

arsenic and inorganic compounds of arsenic, beryllium and its compounds, cadmium and its compounds, chemicals used to produce rubber, iron, steel, coal, chloromethyl ether and bis chloromethyl ethers, chromium, petroleum, polycyclic aromatic hydrocarbons, aluminum, uranium, plutonium, silicon powder, silicate crystals, nickel, etc.

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<sup>1</sup>Katzenstein AL; Prioleau PG, Askin FB. The histologic spectrum and significance of clear-cell change in lung carcinoma. *Kancer* 1980; 45(5): 943.

These are rare causes of lung cancer because normally a person is not very exposed to these chemicals, only when working for a very long time in such environments.

**F- Personal and Family History of Lung Cancer:** People who have had cancer have a higher risk of developing cancer again. Also, people who have had family members (siblings, parents or children) with lung cancer are at higher risk for lung cancer. The increased risk of lung cancer in family members may be due to several factors, such as:

- common behaviors (smoking) or living in the same environment where there is a carcinogen as radium. Studies have shown that the risk of lung cancer increases if a family member developed lung cancer at an early age.

**G- Arsenic:** Drinking water with high levels of arsenic increases the risk of lung cancer. The risk increases further if associated with smoking.

**H- Exposure to Radiotherapy:** People who have been treated with chest radiotherapy for cancers such as Hodgkin's lymphoma or breast cancer have an increased risk of developing lung cancer.

**I- Exposure to Ionizing Radiation:** When atomic bombs explode the risk of lung cancer increases, for this reason, people in Japan are more at risk as they are exposed to these ionizing radiations.

**J- Environmental Pollution:** Some reducing agents, such as sulfur dioxide and carbon particles, are carcinogenic. Air pollutants vary between countries. Some research shows that air pollution in cities has caused lung cancer to develop more in urban areas compared to rural areas.

**K- Weakened Immune System:** increases the risk for lung cancer. Immunity can be weakened by several factors such as:

- Medications (immunosuppressants).
- HIV infection and AIDS. People with HIV AIDS have a higher risk.

#### *Other Possible Risk Factors for Pulmonary Cancer*

The following factors are related to lung cancer, but there is not enough evidence to suggest that they are risk factors. Further studies are needed to clarify the role of these factors in lung cancer.

#### Drinking Marijuana

The data have suggested a link between marijuana smoking and lung cancer but that this link is not as strong as that of smoking with lung cancer.

### Wood Burning

Evidence has shown that there is a potential risk of lung cancer from burning wood indoors. Burning fuels such as wood give a high level of environmental pollution especially indoors and with poor ventilation.

### Diet

More studies need to be done to better clarify the role of diet in the development of lung cancer. Some studies have reported a decreased risk of lung cancer in people who have a diet rich in fruits and vegetables. Some studies have shown a reduction in risk in persons who have a high consumption.

### Selenium

Other studies have shown that smokers who take beta-carotene supplements have a higher risk of lung cancer.

### Sedentary Lifestyle

People who lead sedentary lifestyles have a higher risk of lung cancer, although this has not yet been proven.

### Ovarian Removal

Some studies suggest that removing two ovaries may increase a woman's risk of developing lung cancer. Further studies need to be done to better understand this risk.

## **Pathology of Lung Cancer**

The term lung cancer is used for tumors derived from the respiratory epithelium (bronchi, bronchioles, and alveoli). Mesotheliomas, lymphomas, and sarcomas are different from pulmonary epithelial tumors. According to the World Health Organization (WHO) lung tumors are divided into two types:

- small cell lung cancer SCLC
- non-small cell lung cancer (NSCLC) which histologically includes adenocarcinoma, squamous cell carcinoma, large cell carcinoma (filters) has replaced squamous cell carcinoma with adenocarcinoma, which is the most common form of lung cancer. The incidence of small cell cancer is also declining.

This cancer usually consists of a large layer of malignant cells, which are often associated with necrosis. Histologically, for treatment, lung cancer is divided into two types:

- small cell carcinoma (SCLC)
- Non-small cell carcinoma (NSCLC)

Small cell carcinoma (SCLC) is widespread at the time of diagnosis. Even if it is localized, it is rarely curable with surgical resection. In contrast, non-small cell carcinoma (NSCLC) can be removed by surgical resection in 30% of cases. Small cell carcinoma responds better to cytotoxic chemotherapy. With the biological recognition of cancer, other classifications are being developed, which are based on the presence of specific and molecular mutations. Knowing these molecular differences can help treat tumors in the future.

## **Lung Cancer Cell Types**

### *Adenocarcinoma*

It makes up 20-30% of pulmonary neoplasms. It starts more often in the periphery, it originates from epithelial cells and less from glandular cells. It often appears in the parenchymal scar tissue of previous pathological processes. Due to localization adenocarcinoma has a later onset and clinical manifestations are less evident compared to epidermoid carcinoma. It shows a high tendency to metastasize (second after microcytoma).

### *Large Cell Carcinoma*

The incidence is estimated at 15-20%. It can be of central or peripheral origin. The tumor mass often has large dimensions at the time of diagnosis and is relatively limited. Very often necrotic areas are found. large nuclei, visible nucleoli and abundant cytoplasm. These elements have no aspects of epidermoid, glandular or neuroendocrine differentiation and are organized in solid areas. According to the type of cell differentiation, two variants are distinguished: Giant cell form: with an increased number of polynuclear cells, pleomorphic and others with different shapes. Clear cell form: rare, characterized by cells with clear, foamy and mucin-free cytoplasm.

### *Microcytoma*

It accounts for about 25% of malignant lung tumors. (About 1 in 5 cases with pulmonary Ca results in small cells.) It is a neoplasm of a higher malignant character and with a pronounced ability to spread (metastasize) by the hematogenous or lymphatic route.

The initial mass most often has centrohilar placement. The clinical onset is often signaled by metastases. The frequency of this phenomenon is so high that in the face of a histologically confirmed microcytoma, one must consider the presence of metastasis. The histological type of microcytoma is debatable: Frequent association with paraneoplastic syndromes suggests a cell origin with neurosecretory function. This hypothesis comes from immunohistochemical studies, which often show features of neuroendocrine differentiation such as

Cytoplasmic granulations and the presence of peptides and amines (serotonin, calcitonin, leukoencephaly, gastrin, etc.)

### *Bronchoalveolar Carcinoma*

It is usually found on the periphery of the lungs, near the pleura. It has nothing to do with smoking. Histologically they are seen as alveoli surrounded by cuboid (not flat) cells.

### *Squamous Cell Carcinoma*

Mass in the hilum, with a bronchial origin. Caused by tobacco.

### *Bronchogenic Carcinoma*

Causes hypercalcemia because it secretes PTHrp (PTH related peptide).

### *Bronchial Carcinoid Tumors*

Carcinoid syndrome - secretion of serotonin (5-HT). Signs/symptoms: diarrhea, rash, heart valve carcinoid disease, wheezing sounds in the lungs. Diagnosis: Increased levels of 5-HIAA (5-HT metabolite) are seen in the urine. Methysergide is used during treatment because it is a 5-HT antagonist.

### *Limfangioma/Leiomioma*

Smooth muscle tumor causes blockage of the bronchioles. It is almost always found in women who have not reached menopause. Classic presentation: pneumothorax. Treatment: progesterone or lung transplant.

### *Other Cancer Syndromes*

#### 1. Superior sulcus tumor (Pancoast tumor)

a. Horner syndrome: ptosis, miosis, anhidrosis; caused by damage to the sympathetic nerve/ganglion in the neck.

b. Superior vena cava syndrome: the vena cava is compressed, the tumor is blocked and as a result, the neck veins swell, swelling of the face, cyanosis.

2. Small cell carcinoma causes a syndrome of muscle weakness known as Lambert-Eaton syndrome; the mechanism is the production of antibodies against presynaptic calcium channels; clinically resembles myasthenia gravis.

3. Pulmonary metastases from kidney cancer can cause polycythemia if they produce erythropoietin.



## **Stages of Lung Cancer**

Knowing the stages of lung cancer is very important as its treatment is done based on the stage. For the staging of lung cancer, the TNM system is used, which includes: Cancer or tumor mass (T) Distribution in lymph nodes (N) Distant metastases (M).

### *Stage 0*

This is called the 'in situ' stage of the disease, in this stage, cancer has not invaded near the tissues and has not spread outside the lungs.

### *Stage I*

The cancer is small, it has not invaded any lymph nodes, in this case, the surgery can completely remove cancer. Stage I is divided into two sub-stages, stage IA or IB, tumors smaller than 3cm enter stage IA and tumors larger than 3cm and smaller than 5cm enter stage IB.

### *Stage II*

Stage II is divided into two sub-stages: Stage IIA and IIB. In stage IIA the tumor is > 7cm, has not invaded the lymph nodes or the tumor is <5 cm and has invaded the nearest lymph nodes. In stage IIB, the tumor is larger than 5cm and smaller than 7cm which may or may not have invaded nearby lung structures but not invaded the lymph nodes.

### *Stage III*

Stage III is divided into two subtypes: IIIA and IIIB.

#### *Stage IIIA*

Cancer at this stage is of any size and can: Involve the main bronchus, spread in the pleura, have invaded the lungs of the lateral lung but has not invaded remotely or the tumor is of any size, has spread in the thoracic cage, diaphragm, mediastinal pleura, and membranes around the heart

#### *Stage IIIB*

The tumor is of different sizes, it is spread in the mediastinal part, heart, trachea or with many tumor nodules in the same pulmonary lobe

### *Stage IV*

In this stage, cancer has invaded other parts of the body, the pleura, around the heart, etc. Lung cancer can metastasize anywhere in the body but it usually spreads to the head, bones, liver and adrenal glands.

### **Clinics<sup>2</sup>**

More than half of lung cancer patients detect the disease as it has progressed. In the early stages, the disease can pass without symptoms, the so-called latent asymptomatic stage of the disease. Most patients show signs (symptoms) of lung cancer as consequence:

- primary tumor,
- increase in tumor mass,
- from invasion or obstruction of pulmonary structures,
- occurrence of distant metastases
- paraneoplastic syndrome.

### **Diagnosis of Lung Cancer**

**A- Anamnesis:** The data obtained from the anamnesis are very important for the diagnosis of lung cancer. The symptoms and signs are non-specific and both the doctor and the patient should be very vigilant towards them. Data obtained from medical history such as cough, hemoptysis, chest pain, dyspnea, should make us suspect lung cancer. Family history of lung cancer, personal histories such as smoking, a work environment that may be toxic, etc. The information obtained from the anamnesis can help us formulate a suspicion of lung cancer which then suggests more detailed examinations. About 2/3 of lung cancer is diagnosed in the advanced stage. Diagnosing lung cancer in patients suspected of having this disease is quite complex and includes:

**B- Radiography:** of the thorax. Radiography is the first diagnostic step after the patient's physical symptoms and history, which raise suspicions of lung cancer. Radiography is an examination that gives antero-posterior as well as latero-lateral views, as well as exposes the patient to a small amount of X-ray radiation. Radiographs may reveal suspicious areas, masses, or images in the lungs but are needed for further examination as not every mass found in the lungs is cancerous.

**C- Computed Tomography (CT):** Tomography is usually the second examination after abnormal radiography of the lungs and /or after a normal

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<sup>2</sup>Carter D. Squamous cell carcinoma of the lung: an update. *Semin Diagn Pathol* 1985; 2.

radiograph of the lungs. It can be done to look at the thorax, abdomen and /or esophagus to examine for lung cancer and metastases. A CT-scan examination is done when the radiograph shows an abnormality of the lungs but also when no abnormalities or masses in the lungs are shown based on the radiograph, to be sure the CT-scan examination is performed. Computed tomography uses X-rays combined with multiple images connected to a computer. An advantage of CT-scan is that it is more sensitive than radiography in detecting nodules. Contrast agents can sometimes be used to help better describe the organs. On CT scan the patient is exposed to a minimal amount of X-rays. The most unwanted effect is usually caused by the contrast agent. This usually causes redness, itching, which disappears very quickly. Severe anaphylactic reactions from contrast agents are rare. CT of the abdomen can identify both metastases in the liver as well as in the adrenal glands, CT of the head can detect the presence and extent of cancer metastases in the brain. Another technique called spiral CT is used to identify lung cancer. This procedure requires a special type of CT-scanner and is quite effective in identifying cancer in its early stages in smokers and ex-smokers.

**D- Magnetic Resonance:** Magnetic resonance imaging is done to better determine the details of the tumor. The magnetic resonance imaging technique uses magnetization (radio waves and a computer to produce body images). Magnetic resonance imaging has no known side effects so far and the patient is not subjected to any radiation exposure. The image produced by magnetic resonance imaging is quite detailed and can detect even small changes in structures within the body. People with mechanical implants, pacemakers, artificial heart valves can not do resonance because of the risk that the magnet can move the metal part of these structures.

**E- PET (Positron Emission Tomography):** PET is a specialized technique that uses radioactive materials to produce 3-dimensional color images of body tissues. While CT-scan and Magnetic Resonance look at anatomical structures, PET scan measures metabolic activity and the function of the tissue. PET scanning can determine if tumor tissue is actively growing and can determine the type of cells within a particular tumor.

**F- Cytology of Sputum:** Diagnosis of lung cancer always requires confirmation of malignant cells by a pathologist, when symptoms and radiography raise suspicions of lung cancer. The simplest method to make a diagnosis is to examine the sputum with a microscope. If the tumor is located in the central part of the lungs and when it has invaded the airways, this procedure is known as salivary or sputum cytology can visualize tumor cells. This procedure is safe and inexpensive for diagnosing tissue but its value is limited as cancer cells are not always present in sputum even if the tumor is present in the lungs. Also, the non-cancerous cell may occasionally change as a result of the reaction to inflammation or injury that makes it look like a cancerous cell.

**G- Bronchoscopy:** It is a method of clinical examination. It allows direct view of the tumor and through bronchoscopy we can also get biopsy material. With bronchoscopy we can not only look at or suspect a cancerous process, obtain biopsy material, determine in some cases the inoperability of cancer but it can also be used for palliative resection in stenotic bronchial carcinomas. The procedure can be uncomfortable and requires sedation and anesthesia. Bronchoscopy, to be performed correctly, must be done by a pulmonologist or surgeon. The undesirable effect can be cough with blood clots 1-2 days after bronchoscopy, while serious complications of bronchoscopy are rare include: major hemoptysis, decreased level of O<sub>2</sub> in the blood, cardiac arrhythmia and complications from anesthesia and sedatives.

**H- Taking Tumor Tissue for Biopsy:** Taking tumor tissue for biopsy with a needle through the skin as well as under the observation of radiological images is very important to determine the diagnosis of lung cancer. This is especially useful when the tumor is localized in a peripheral part of the lungs and no tumor tissue can be sampled by bronchoscopy. Before starting the procedure, local anesthesia is applied to the area where we will take the needle material from the tumor tissue through the skin. This procedure is generally correct when the affected area is very well located by other procedures, if this area is not well localized then the whole procedure is incorrect. A rare complication (2-5%) that occurs when taking needle material for a biopsy is pneumothorax.

**I- Thoracentesis:** Sometimes lung cancer also involves the tissues around the lungs (pleura) which leads to the accumulation of fluid in the space between the lungs and the thoracic cage. Aspiration of a sample of this pleural fluid with a needle can detect cancer cells and establish the diagnosis. Like the above procedure, thoracentesis has a small risk of developing a pneumothorax.

**J- Mediastinoscopy:** Mediastinoscopy is a surgical examination that is performed by making an incision in the thoracic plate between the ribs and then through this incision, a sample is taken from the lymph nodes or tumor tissue for biopsy. This procedure is performed under general anesthesia in the operating room.

**K- Thoracotomy:** Thoracotomy is a procedure that is performed under general anesthesia in the operating room. The surgeon makes an incision in the chest board and directly examines the lungs and takes a sample from the tumor tissue to examine.

**L- Tests:** Routine blood tests may not diagnose lung cancer, but they can detect the body's biochemical or metabolic abnormalities that accompany cancer. For example, high levels of calcium or the alkaline phosphatase enzyme provide evidence of bone metastases. Also increased levels of the enzyme AST or SGOT and ALT or GSTP provide evidence of liver damage from the tumor.

## **Treatment**

Treatment for lung cancer may include surgery, chemotherapy, radiotherapy, and/or a combination of these. The decision as to which method is most appropriate is made according to the individual and taking into account the location and stage of the tumor as well as the general health condition of the patient. As with all tumors, the therapy given can be curative or palliative. More than one type of therapy can be given in many cases. In these types of cases, the therapy added to the first is called adjuvant. Other types of treatment such as hormone therapy, biological therapy can also be used for some types of tumors. Cancer treatment is done by a specialist doctor in oncology. Stage Cancer treatments can be done for:

**Prevention:** Prophylaxis is done to prevent the growth and proliferation of cancer cells or to remove precancerous tissues that can turn into cancer.

**Treatment:** Treatment, in this case, is done to cure the cancer.

**Cancer control:** Treatment, in this case, is given to control the tumor and stop the growth and spread of cancer cells

**Palliative:** When a cure is impossible then treatment is done to reduce symptoms such as pain, dyspnea, hemoptysis, to increase comfort and quality of life. Scientists say they used an experimental vaccine called Gvaks to eliminate lung cancer. It is made up of a molecule that contains a specific gene. This gene is placed in cancer cells, which changes the appearance of these cells and thus cancer can be easily identified and can be cleared up as is done in cases of infections, flu or cold. The data show that in some patients the lung tumor completely disappeared, while in others the progression of the disease slowed significantly. In some patients who tried this vaccine three years ago, cancer did not recur, says Dr. John Nemunatis, an oncologist at the center Baylor University Medical School in Dallas, Texas. According to scientists, this is the first study that shows that lung cancer can disappear completely or for a long time. A similar effort against skin cancer has also yielded promising results.

**Surgery:** Surgical removal of the tumor is usually reserved for only one stage of the tumor, the second stage of non-small cell cancer, and is the treatment of choice for cancer that has not spread beyond the lungs. About 10-35% of malignant lung tumors can be removed with surgery. Among people who have isolated cancer that grows slowly, 25% have survived after diagnosis. Surgery is not possible if the cancer is too close to the trachea or if the patient has other serious problems. The surgical procedure chosen depends on the type and location of cancer. Pulmonary cancer surgery is a major surgical procedure and requires a great deal of follow-up and nursing care, and the hospitalization period can last for months.

**Chemotherapy:** Chemotherapy is a treatment that uses cytotoxic anti-cancer drugs for the treatment of lung cancer. It is a systemic therapy that circulates throughout the body destroying cancer cells, including cells that have spread to the body, i.e., when the tumor has given distant metastases. Chemotherapy is the treatment of choice for most small cell tumors because in most cases these tumors are very common at the time they are diagnosed. Chemotherapy can be given orally or in the form of i/v infusions or a combination. It is the nurse's job to inform the patient of these side effects as well as to assist in treatment and management. Chemotherapy is usually used to treat lung cancer such as:

- Initial treatment with or without radiotherapy.
- Before treatment with radiotherapy or surgery to reduce the tumor.
- After surgery to destroy the remaining cancer cells and reduce the risk of cancer recurrence.
- To soothe pain or control symptoms in advanced tumors (palliative chemotherapy).

Types of Chemotherapy Chemotherapy commonly used to treat lung cancer is platinum, cisplatin (Platinol AQ) or Carboplatin (Paraplatin) based therapy and usually nationwide is initiated by one of these:

#### *Nursing Process*

Nursing anamnesis. Anamnesis is the 'patient history', the causes that have influenced or are influencing the patient's state of health. This story is taken by the patient or the person accompanying him. In the nursing history, the patient reports that he has been a smoker. The patient reports that recently there has been dyspnea, cough, at first dry and then with sputum and blood clots, which is also at night, there is chest pain, fatigue, rupture, anorexia and weight loss. He points out that recently there has been an exacerbation of these symptoms.

Nursing evaluation in patients with lung cancer. The nurse evaluates for signs and symptoms that are: cough, hemoptysis, chest pain, dyspnea, fatigue, weight loss. The nurse asks the patient, how long do they want to smoke, how many cigarettes do they smoke per day. Evaluates cardiopulmonary tolerance during rest, eating, walking. Evaluates the lungs for the presence of pulmonary noises such as rale, wheezing, stridor, if the patient has shallow breathing or deep breathing, use of accessory muscles to facilitate breathing. Evaluates the skin for cyanosis which indicates abnormal ventilation of the lungs. The nurse evaluates the cough, whether it is a persistent cough, a productive cough, sputum or blood clots. Evaluates for chest pain, if it is constant pain, if it is aggravating, stabbing. Evaluates the cardiac system for tachycardia, bradycardia, measures the pulse. Evaluates general signs such as anorexia, weight loss, fatigue, rupture. Evaluates anxiety, patient fears about cancer diagnosis, and fears of a poor prognosis.

*Diagnosis and Nursing Management*

**1- Gas Exchange Impaired as a Result of Lung Tumor:** In patients with lung cancer, there is impairment of the exchange of O<sub>2</sub> and CO<sub>2</sub> gases as a result of the tumor mass, which can obstruct a part of the lung, as a result of secretions that may flow from the tumor and that may obstruct the bronchi, caused the patient to fail to have adequate ventilation of the organism. Signs and symptoms that indicate gas exchange impairment are pulmonary murmurs such as wheezing, wheezing, abnormal frequency and depth of respiration, dyspnea, cyanosis, cough with or without secretions. The nurse should intervene to improve gas exchange and adequate alveolar ventilation. Instructs the patient to move and cough occasionally so that through the cough the secretions are expelled which obstruct the bronchi and impede ventilation. The nurse instructs the patient to take deep breaths occasionally by inhaling through the nose and exhaling through the mouth, as this affects the increase of pulmonary elasticity as well as a more adequate respiration. The nurse assists in positioning the patient, raising the head of the bed at an angle of 35 ° - 45 ° to facilitate breathing and dyspnea. The patient is encouraged to get enough rest and maintain strength. If all of these fail to make the patient manage to have adequate oxygenation of the tissues then it is necessary to do oxygen therapy. Oxygen can be given with a mask, cannula, Ambu balloon, etc. The nurse administers medications such as bronchodilators, corticosteroids, mucolytics, antibiotics, antihistamines. It is very important that the patient does not smoke because smoking increases the production of secretions and irritates the respiratory mucosa and this leads to an aggravation of dyspnea and inefficient breathing.

**2- Pain** which may be related to tumor mass, surgical incision, drainage tubes, tumor metastases to the head and bones. Pain is experienced differently in different patients. It can be caused by an invasion of the tumor in the pleura giving pleural pain, by metastases to the bones and head, pain after surgery by surgical incision, tissue trauma, the presence of drainage tubes, etc. The nurse should ask the patient about the location of the pain, the characteristics of the pain, whether it is persistent pain, aggravating pain, cutting, burning, etc. We estimate the pain intensity from 1-10, to have it easier in the administration of medications. The patient is helped to move and position himself in bed to relieve the pain. Creates a more relaxing environment and suggests moving, if the state of health allows it to relieve pain and distract by removing the mind from the pain. The nurse administers the medication as prescribed by the doctor, as an analgesic to relieve the pain.

**3- Nutritional deficiency**, which may be associated with increased tumor mass, compression of the esophagus by tumor mass. The tumor influences the metabolic requirements of the body because tumor cells "compete" for nutrients with normal cells. The patient often has nausea and vomiting which lead to a nutritional deficit and weight loss. Tumor in the regional part of the

thorax gives compression of the esophagus giving dysphagia. Treating cancer with radiotherapy and chemotherapy can lead to eating disorders and loss of appetite, also chemotherapy and radiotherapy usually cause nausea and vomiting. Nursing in collaboration with the dietitian should design a daily program for feeding the patient according to his needs and taste. The patient should be encouraged and assisted in nutrition by creating an environment as conducive to nutrition as possible and removing odors or ingredients that may cause vomiting. If the patient has vomiting, the nurse should record the quantity and quality of the vomit. We administer antiemetics to stop vomiting. If we fail to perform adequate nutrition to the patient, as a result of nausea and vomiting, then it is necessary to make parenteral nutrition to meet the nutritional needs of the patient. In general, cancer patients have weight loss, so it is necessary to measure the patient's weight, assess nutritional needs, and change his diet.

**4-** Anxiety and fear regarding the diagnosis, treatment and prognosis of cancer. The moment the patient is told the diagnosis of cancer, he may fall into a state of shock, may become irritated, deny the disease, and refuse to accept what is happening to him. The nurse should help the patient, express concerns, anxiety, fears he /she feels regarding the cancer diagnosis. The patient should be encouraged to participate in his decisions regarding the treatment of the disease. Some patients show a sense of distrust of the team medical, even to interventions performed to treat the disease. The patient needs the support of family members, relatives, reassuring them that a reaction on his part is normal when presented with a diagnosis as difficult as cancer. Other people who can help and be involved in psychological treatment to reduce anxiety and fear may be: psychologist, psychiatrist and social worker.

**5-** Lack of knowledge about the disease and its treatment. The nurse has a responsibility to get the patient information about his or her illness, if he or she requests this information, many patients want to know about their diagnosis, while some others just want to know what is needed for them to manage their activity day. The participation of family members or other persons is important and encourages the patient for any discussion. The nurse understands what he wants to know, gives information about the disease and its treatment, shows the side effects of chemotherapy and radiotherapy, about the surgical intervention, explains especially the surgical process. When necessary sketches or figures can also be used to illustrate it so that it can be more easily understood by the patient. The nurse must speak in a language that is understandable to him and not in complicated terms, gives information about self-care, understands the signs and symptoms which indicate the progress of treatment such as changes in the appearance of the incision, difficulty breathing, dyspnea, chest pain, temperature, change in the appearance of sputum. All of these help in the early detection and prevention of complications. Recommend a high-protein, high-carbohydrate diet if needed. Recommends not to perform physical activity which causes pain and dyspnea.



### **Nursing Care for Patients who Will Undergo Surgery<sup>3</sup>**

**1- Preoperative Phase:** This phase begins from the moment the decision is made to undergo surgery and ends at the moment of transferring the patient to the operating table. This stage involves the patient's physical and psychological preparations and assessments before surgery. At this stage a complete preoperative history is provided, making physical assessments of the patient. At this stage we look at and monitor the respiratory systems, look at respiration, respiratory rate, depth of respiration, look at the use of accessory muscles for easy breathing, look at mucosal discoloration for cyanosis which tells us about hypoxia. Improving alveolar ventilation is very important at this stage. The nurse assists in providing care that includes avoiding bronchial irritants, especially smoking, drinking large amounts of fluids, and using moisturizers to disperse secretions, administering bronchodilators as prescribed to reduce bronchospasm, and instructing her to breathe for better ventilation. The aggravated condition of the lungs is often accompanied by an increased amount of respiratory secretions. In the preoperative period, the airways should be cleared of secretions to reduce the possibility of atelectasis or infections in the postoperative phase. This is accomplished through moisturizing, postural drainage, and chest percussion accompanied by administration of bronchodilators (if prescribed). Sputum volume is measured daily in patients who excrete a large number of secretions. These measurements are made to determine if the quantity of secretions is decreasing. We monitor the cardiac system, do ECG, measure pulsing blood pressure, identify if the patient has tachycardia, bradycardia. The infant evaluates the function of the liver, gastrointestinal, renal, endocrine, neurological, hematological function, how explain the surgical intervention, the presence of tubes in the chest and drainage bottles, the administration of oxygen to facilitate breathing and if it is possible to use the ventilator. The patient has explained the importance of continuous bed rest to promote drainage of lung secretions, instruct the patient to use the spirometer starting in the preoperative period to instruct the patient and with its correct use. Because the cough plan will be important in the postoperative period to excrete secretions, the patient should be instructed on the technique of He is taught to press the incision site with his hands, folded pillow or towel. As it is known, the patient before the operation has anxiety and fear about the surgical intervention. It can show very important reactions such as fear of bleeding due to sputum in the blood, discomfort from chronic cough and chest pain or fear of death due to dyspnea and tumor. The nurse helps the patient to get rid of most of these fears. This is done by correcting any misconceptions about surgery, giving reassurance about surgery, and answering questions about pain, discomfort, and treatment very tactfully.

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<sup>3</sup>Onkologjia klinike Prof.As,Agim Sallaku, Dr.Agim Karaj,D.Sh.M.Dhurata Tarifa, Prof, Nikollaq Kaçani,D.Sh.M.Silvana Celiku, D.Sh.M. Majlinda Konomi, Dr.Donika Materaku, Dr.Gezim Selenica. ISBN 978-99943-0-245-1 Tirane 2012

**2- Intra-Operative Phase:** The intra-operative phase is called the period that starts from the moment the patient enters the operating room until the moment when the patient enters the intensive care room or ward. The nurse accompanies the patient to the operating bed, where he helps to be positioned. She also submits to the operating room the nurse card written with all the patient data and his condition. At the time of the operation, the nurse writes all the details of the operation, how the operation went, the presence of drains, the fluids are given to the patient, the anesthesia used, etc. At the end of the operation, the nurse assists the anesthesiologist to wake the patient and after he is awake and manages to breathe, he is aware, so he has well monitored the vital parameters, the patient then goes to resuscitation.

**3- Post-Operative Phase:** This phase begins with the admission of the patient to the waking room and ends with an evaluation-follow-up in the clinic or at home. Once the patient is in the waking room, airway assessments are performed, pulmonary status is monitored, respiratory sounds, depth, rhythm and pattern of breathing are assessed, skin color is assessed for cyanosis, blood gases are assessed for signs of hypoxia and debris. of CO<sub>2</sub>. The nurse measures and records blood pressure, pulse and central venous pressure every 2 hours. Continuously monitors ECG for dysrhythmia. Dysrhythmias are more common after thoracic surgery. In patients with total pneumonectomy, there is a particular tendency for cardiac disorders. We measure the patient's temperature. Encouraged patients for deep and effective breathing as well as encouraging the use of spirometers, this helps to achieve maximum expansion of the lungs and in the opening of closed airways. The patient is encouraged and helped for an effective cough (achieved) every 1-2 hours. Coughing is necessary to remove the remaining secretions which move with difficulty from the operated region. The nurse should look at the amount, viscosity, and odor of sputum. Sputum changes suggest the presence of infection or changes in pulmonary status. The surgical incision is inspected for redness and hyperthermia, hardening, odor, cracking and drainage. Drainage, shocks and vibrations are checked as described. The patient is placed in a semi-fowler position. Patients with conditional respiration may not be able to return to the unoperated side. The patient is assisted in changing position every 2 hours. Medications are administered as prescribed by the physician.

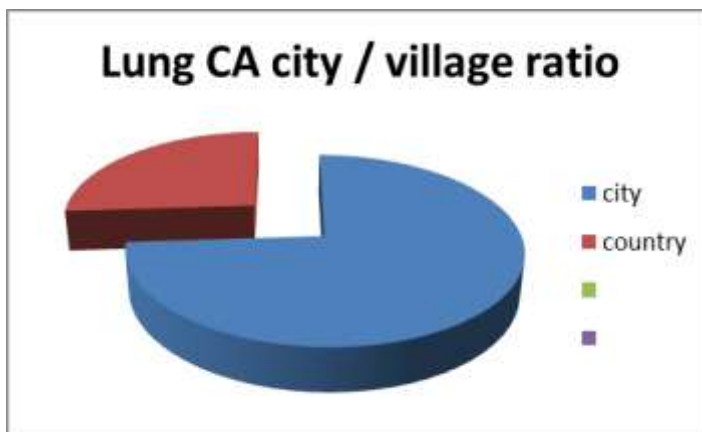
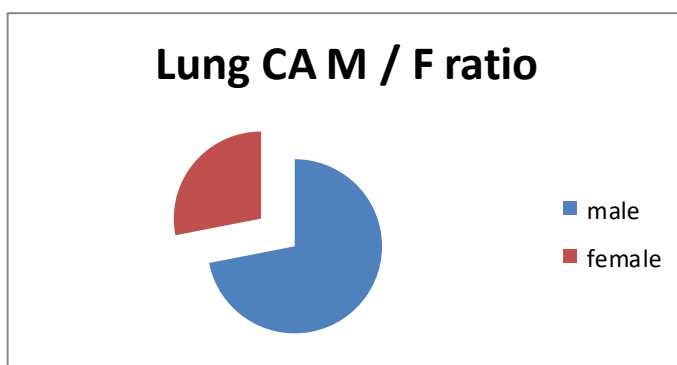
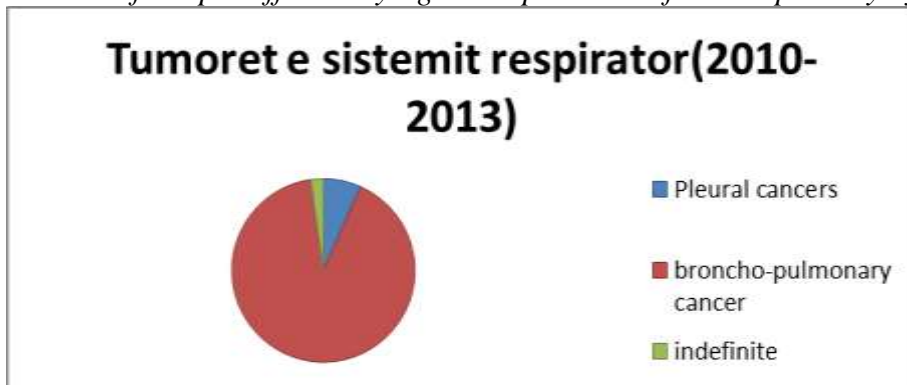
### **Statistical Studies**

Statistical studies were conducted at Durrës Hospital, where the records of hospitalized patients with lung cancer were used. The studies cover a period of 4 years (2010-2013). The number of people registered with this disease for the period 2010-2013 was 60, most of whom were male, also most of the patients

were from the city. Statistical data show that the most affected age is over 60 years old, mainly male<sup>4</sup>.

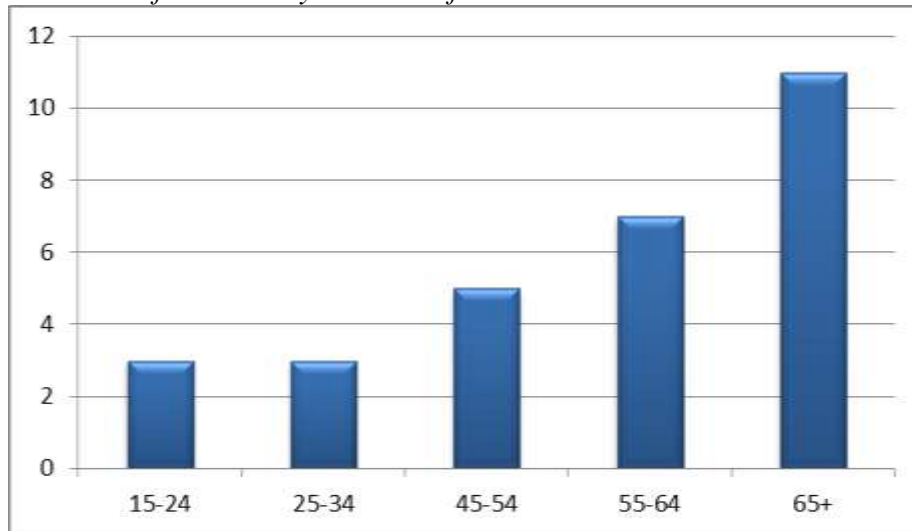
*Data of Durrës Regional Hospital 2010-2013*

*Number of People Affected by Age Group Cancer of the Respiratory System*



<sup>4</sup>Data from Durres Regional Hospital.

*Variation of Pulmonary CA M / F for the Period 2010-2013*



## Results

After taking in the study of 60 patients, it is clear that the largest number of those affected by lung cancer is resident in the city. Also most at risk of this disease are men. The most affected age is over 45 years old, the peak reaches over 65 years old.

## Recommendations

- The best way to prevent lung cancer is to stop smoking.
- Trying to avoid people around who smoke, avoiding places where smoking.  
Ensure good ventilation if radon gas is present in the living space.
- Wearing protective equipment if working in an industry that is exposed to known substances that cause lung cancer.
- A diet rich in fruits and vegetables can reduce the risk of developing lung cancer. However, this has not yet been proven.
- Early cancer diagnosis helps treat the disease and increase the life expectancy of patients with lung cancer.

## Conclusions

From the studies conducted it is noticed that from year to year the incidence of lung cancer is increasing, this is noticed not only in men but also in women. This phenomenon is more pronounced in urban areas. Lung cancer is the biggest killer cancer in Europe and worldwide. Even in Albania, it is spreading rapidly. 20% of deaths from cancerous diseases belong to lung

cancer (28% in men and 10% in women). Although in women, breast cancer is the leading cause of cancer deaths (18%), in some countries no. of women dying from lung cancer are higher than from deaths from breast cancer.

This type of cancer is one of the main health problems in our country as well as all over the world. Nowadays pulmonary CA is the leading cause of death from CA for both sexes (causes more deaths than breast, prostate, colon and pancreatic cancer taken together).

### **References**

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4. Data from Durres Regional Hospital.