

**Ministry of health of Ukraine
Higher state educational establishment of Ukraine
“Ukrainian medical stomatological academy”**



«Approved

At the sitting of the chair of oncology
The minutes №2 from September 1, 2018.
Manager of chair of oncology
MD, professor V.P.Bashtan

**METHODICAL POINTING
FOR INDEPENDENT WORK OF STUDENTS
DURING PREPARATION TO PRACTICAL EMPLOYMENT**

<i>Educational discipline</i>	<i>Oncology</i>
<i>Module №</i>	<i>I</i>
<i>Semantic module №</i>	<i>2</i>
<i>Theme of employment</i>	Lung cancer
<i>Course</i>	<i>V</i>
<i>Faculty</i>	<i>Medical №1, №2</i>

Poltava – 2018

THEME OF EMPLOYMENT: “Lung cancer”

Amount of hours – 2 educational hours.

Material and methodical providing of theme: educational room, clinical department of oncologic dispensary, organizationally-methodical department of oncologic dispensary, separation of oncologic dispensary. Methodical recommendations for students, copies of medical document, stands, tables, tests, tasks.

1. Actuality of theme.

Beginning from 1985 year, the cancer of lungs takes first seat in the general structure of morbidity of population on malignant new formations. Taking into account that now almost all population of country passes the inspection on roentgenofluorography, where it is possible to see the first changes in lung, knowledges of chronic pulmonary pathology, difficulties in raising of diagnosis, all of it stipulates actuality of this pathology for the students of Institutes of higher. Among the reasons of development of cancer of lung smoking of tobacco, contamination of environment by the offcuts of metallurgical and coal industry goes out into first place. Almost 90% all malignant formations at the miners of makes the cancer of lungs.

2. Educational aims.

To know (and II):

1. To learn the question of etiology, pathogeny and epidemiology of lung cancer.
2. To familiarize with the factors of risk of lung cancer.
3. To know a clinic, semiotics and methods of common inspection of patients.
4. To know the methods of the special inspection of patients with the lung cancer.
5. Etiology a lung cancer;
6. Clinical and TMN classifications;
7. Clinic of lung cancer;
8. Basic methods of treatment of patients with the lung cancer.

To be able (and III)

1. To be able to conduct a differential diagnosis.
2. To know the methods of treatment of patients with the lung cancer: therapeutic, surgical.
3. To conduct the common inspection of patients with the lung cancer;
4. To conduct a differential diagnosis (pneumonia, cyst of lung, schistosomiasis);
5. Tactic of conduct of patients with the lung cancer.

Practical skills on a theme:

1. Review, questioning of patient.
2. Reading of roentgenologic pictures and computer tomography.
3. Puncture of pleura cavity.
4. Radical research of lights.
5. Bronchoscopy.
6. Palpation of lymphonoduss.

3. Interdisciplinary integration (base knowledges, abilities, skills necessary for the study of theme)

Disciplines	To know	To be able
Anatomy	Skeletonomy, syntopy of lung, features of circulation of blood, lymphatic channels of thorax.	To own the methods of inspection, to decrypt the clinical analyses, appoint treatment on the first stages and other.
Pathoanatomy	Histological structure of lung cancer.	
General therapy	Methods of common inspection of patients.	
Oncology	Radial therapy of lung cancer, chemotherapy.	

3.2. Table of contents of theme.

a) Precancerosis diseases – among the precancerosis diseases there are no pathological processes which concerne, as obligatory precancer. Processes which the squamoses metaplasia of bronchial epithelium is at belong to the optional precancerous states, this such as:

- chronic recurring bronchitis;
- chronic abscesses;
- bronchiectasis and cavities;
- cysts;
- pneumofibrosis is noncommunicative;
- chronic interstitial pneumonia.

Malignancy at such processes 10 – 15%.

Histological the cancer of lights is divided:

- squamous cell carcinoma (40-50 %);
- small cell carcinoma (20-25 %);
- adenocarcinoma (15-25 %);
- large cell carcinoma (10-15 %);
- carcinoid tumor.

It is macroscopically divided:

- **a exophytic cancer** grows toward the road clearance of bronchial tube, is a principal reason, so-called, bronchial syndrome: irritations of bronchial tube, pathological excretions atelectasis. The expressed of him depends on localization of tumor. Exophytic shrines quickly result in atelectasiss, predetermine appearance of temperature, pain and functional syndromes.
- **endophytic cancer** – bronchosenosis develops slowly, an atelectasis comes later.
- **mesophytic cancer** is the expressed of symptoms depends on that, what component of tumor (exophytic or endophytic) prevails and whether there is destruction of mucus shell.

After localization:

- **central cancer** are tumors arise out of epithelium of mucus shell of primary, intermediate and segmental bronchial tubes (70-80 %);
- **peripheral cancer** – tumors which develop from the mucus of mucus subsegmental bronchial tubes and bronchiole belong to him (15-25 %);
- **atypical cancer** is the special localization of tumor which mostly does not cause bronchopulmonary symptoms, and shows up exhausting pains on a background varied neurological, rarer vascular displays (Penkost's tumor), happens rarely.

EPIDEMIOLOGY

From 1985 year cancer of lung takes first seat. In 2000 on Ukraine meets in 23,7 % men. More frequent in all are (1995) ill in the Poltava region - 50,8; Donetsk - 59,6 and Kirovograd - 65,8 on 100 thousands of population. Morbidity is high in the Zaporozhe, Kharkov, Kherson regions – over 54,4. Lowest morbidity in Rovno - 29,1 and Lvov regions - 32,5. On a world scale high morbidity on the cancer of lung is fixed in the USA, England, Germany, Japan.

ETIOLOGY

Smoking of tobacco, contamination of atmosphere by chemical carcinogens, increase of radiation. Mineral an earth-flax enters in over 3000 names of the manufactured goods. This matter causes the disease of asbestos, and caustic tumor - mesothelioma of pleura and peritoneum. At patients with the asbestos cancer of lung is observed in 10 times more frequent, than among the people of other professions.

Classification of lung cancer after stages.

A I stage is the small limited tumor of large bronchial tube, endo- or peribronchial forms of growth, and also small tumor of small and the least bronchial tubes, without the germination of pleura, without the signs of metastases.

A II stage is the tumor of largenesses, but without the germination of pleurae letters, which has single metastases in the nearest regional lymphatic nodes.

A III stage is a tumor, that exceeded supply lungs, growing in one of neighboring organs (pericardium, pectoral wall diaphragm), which a lot of metastases has in regional lymphatic nodes.

IV stage is tumor with excrescence on a pectoral wall, mediastinum, pleura and remote metastases.

INTERNATIONAL CLASSIFICATION OF TNM

I. Tumors of root of the lung.

T0 - there are no signs of primary tumor.

T1 is a tumor is marked off by a lobar bronchial tube.

T2 - - " -, marked off by a segmental bronchial tube.

T3 is a tumor takes a main bronchial tube or two bronchial tubes.

T4 is a tumor spreads outside lungs.

N0 - there are no clinical, roentgenologic or endoscopy signs of increase lymphatic nodes.

N1 - there are the proper signs of increase inwardly thoracic lymphatic nodes.

Nx - there is no sufficient information for estimation of regional lymphatic nodes.

M0 - there are no signs of remote metastases.

M1 is present remote metastases.

M of x - deficiency of information for determination of remote metastases.

II. Peripheral tumors.

T0 - there are no signs of primary tumor.

T1 is a tumor keeps indoors outside one segment.

T2 is a tumor keeps indoors outside the fate of lungs.

T3 is a tumor takes in a process more than one fate of lungs.

T4 is a tumor spreads outside lungs.

N0 - there are no clinical, roentgenologic or endoscopy signs of increase inwardly thoracic lymph nodes.

Nx - as well as at tumors of root.

M0 - there are no signs of separate metastases.

M1 - there are remote metastases.

M of x - as well as at tumors of root.

CLINIC.

In a clinic distinguish three stages: before clinical, phase of early clinical displays and recognition, phase of widespread disease.

Clinical displays, even if happen, it passes as the easy forms of intercurrent diseases of respiratory tracts (pneumonias, migrant infiltrates, sometimes atelectasis). At the inspection appears, that all these displays have one origin is initial bronchial stenosis of tumor origin.

The phase of early clinical displays answers invasive cancer I and II stages. For the cancer of lungs there are no pathognomonic symptoms. He shows up those signs, what other pulmonary diseases. On the whole this dry cough that calling suffering, lung sputum, farther with a blood, pus. Stethalgia, increase of temperature bodies, weakness, stuffiness.

The phase of widespread disease answers III and IV stages of cancer lungs and predefined by the local invasion of tumor in surrounding organs and structures, by metastases in inwardly pectoral lymphonoduss and remote metastases varied after localization. Functional disorders of breathing and circulation of blood, pain syndrome organic changes, are the clinical displays of widespread disease from the side of the nervous system.

DIAGNOSTICS

- Anamnesis.
- Physical methods of inspection (external review, percussion, palpation, auscultation).
- Clinical methods of inspection.
- Roentgenologic.
- CT.
- Bronchoscopy.
- Thoracoscopy – finds out the degree of defeat of pectoral cavity by a tumor process.
- Cytological research.
- Additional methods of inspection (immunological, serum, microbiological et al).

TREATMENT

1. Surgical:

- Pneumonectomy is rotined at metastases in pulmonary lymphatic nodes (N1);
- Bilobectomy are shows those, what for pneumonectomy;
- a lobectomy is rotined to the patients with low functional backlogs;
- the resection of bronchial tubes is conducted rarely enough in combination with a lobectomy.

2. Radial:

- palliative course on 2Гр x 25 – 30, course 50 – 60 gr.
- radical program – 180 – 200 advices. Course 6000 – 7000 advices.

3. Chemotherapy.

4. Symptomatic treatment.

PROGNOSIS

Depends on the stage of disease and histological structure of tumor. After surgical treatment 2,5-30 % live more than 5 years. After radial and complex therapy - 1,5-3 years. Not treating oneself 1-2 years.

COUNT OF LOGICAL STRUCTURE ON THEME: “LUNG CANCER”

1. Etiology.

- smoking of tobacco;
- contamination of air;
- chronic diseases of lights.

2. Pathoanatomy.

- exophytic (endobronchial) ;
- endophytic (exobronchial).

3. Forms of growth of tumor.

- central;
- peripheral.

4. Clinical symptoms.

- blood spising;
- syndrome of irritation of bronchial tube;
- temperature syndrome;
- pain syndrome;
- syndrome of compression of pulmonary fabric.

5. Localization of metastases.

- supraclavicular lymphonoduss;
- paravenous, root of lung;
- bifurcational;
- paraaortal.

6. Laboratory and instrumental methods of research.

- biopsy of lymphonoduss;
- bronchoscopy;
- CT with puncture of tumor;
- surveying sciagram of pectoral cavity.

7. Treatment.

- surgical;
- radiological;
- chemical.

8. Prognosis.

9. Prophylaxis.

10. Risk factors.

3.3. RECOMMENDED LITERATURE:

a) Basic

1. Oncology / [Edited by prof. I.B.Shepotin, prof. R.T.Evans]. – Kiev: Medicine, 2008. – 496 p.
2. Clinical oncology / [V.Sorkin, A.Popovich, Yu. Dumanskiy and oth.]; under the edit. of the prof. G.V.Bondar. – Simferopol, 2008. – 192 p.

b) Additional

1. Ain KB: Anaplastic thyroid carcinoma: a therapeutic challenge. Semin Surg Oncol 1999; 16: 64-69.
2. Scully C, Field JK, Tanzawa H: Genetic aberrations in oral or head and neck squamous cell carcinoma (SCCHN): 1. Carcinogen metabolism, DNA repair and cell cycle control. Oral Oncol 2000 May; 36 (3): 256-63.

3.5. Materials for self-control

A. Questions for self-control

1. Transfer the etiologic factors of lung cancer.
2. What clinical symptoms at patients with the lung cancer.
3. Clinical classification of lung cancer.
4. Name the additional methods of inspection of patients with the lung cancer.
5. Surgical method of treatment of lung cancer. Name classic operation at this pathology and authors, that offered her.
6. Combined treatment of patients with the lung cancer.
7. It is united is radial method of treatment of patients with the lung cancer.

B. Tests initial level of knowledges on a theme: “Lung cancer”

1. Anatomy:

- a) pulmonary arteries carry a blood saturates by oxygen;
- b) pulmonary veins carry a oxygenation blood;
- c) bronchial arteries walk away from an aorta and intercostal vessels;
- d) normal lung do not have veritable bronchial veins.

2. For the cancer of lung for least certain:

- a) high degree of correlation of smoking;
- b) the reason of lung cancer from action and tobacco of resin is well-proven on animals;
- c) annual growth rates of lung cancer at the women of cities higher, than at men;
- d) higher men have the increase of cancer;
- e) a period between beginning of disease and appearance of symptoms in middle one makes 3 years.

3. For the central lung cancer not typically:

- a) stuffiness;
- b) dry cough, with a sputum;
- c) blood spitting;
- d) changes of voice and hoarse;
- e) pain in a shoulder.

4. Changes in voice at the lung cancer more frequent testify oh bringing in a tumor process:

- a) vocal cords;
- b) walls are leafed;
- c) diaphragmatic to the nerve;
- d) recurrent to the nerve;
- e) vagus nerve.

5. The symptom of Horner is characteristic:

- a) tumors of mediastinum;
- b) cancer of apex lung;
- c) cancer of middle lobe of right lung;
- d) esophageal cancer;
- e) mediastinal form of lung cancer.

6. For the lung cancer characteristic all transferred hormonal displays:
 - a) hyperglycaemia;
 - b) carcinoid syndrome;
 - c) gynecomastia;
 - d) knotted goitre;
 - e) syndrome of Cushing.

7. For a peripheral malignant tumor lung least reliable roentgenologic signs is:
 - a) dense homogeneous darkening;
 - b) appearance of clear of cavity;
 - c) unclear, radial border;
 - d) expressed calciphylaxis;
 - e) round or wrong round form.

8. More frequent in all lung cancer on the histological structure is:
 - a) squamous cell;
 - b) large cell not is differentiated;
 - c) oat cell carcinoma not is differentiated;
 - d) adenocarcinoma;
 - e) alveolar carcinoma.

9. Syndrome of Cushing and pathological secretion of antidiuretic hormone, which hyponatremia is accompanied with violation of consciousness, more frequent is observed at the lung cancer with histotype:
 - a) by the squamous cell cornification;
 - b) squamous cell without the cornification;
 - c) all forms of metastases cancer;
 - d) low differential ;
 - e) only with alveolar.

10. A pseudohypercalcemia which hypercalcemia is accompanied can be:
 - a) at trivial cellular to the cancer;
 - b) at adenocarcinoma;
 - c) at a low differential cancer;
 - d) at the metastases defeat of bones;
 - e) right a), b).

Answers: 1)a; 2)d; 3)e; 4)d 5)b; 6)d; 7)d; 8)a; 9)d; 10)e.

C. Situational tasks for self-control.

Task № 1 (№ 276).

A patient 62 years is under surveillance of internist on an occasion often recurring pneumonia. Week ago the high temperature of body appeared, cough with sputum. A patient is hospitalized. At roentgenoscopy of thorax in lower lobe of left lung near to the root it is intensive darkening pozmipom 4x4 cm with unequal contours, decline of transparency of this fate. In the scolded lung megascopic lymphonoduss, pus, BK and atypical cell, in sputum not are discovered. Diagnosis. Tactic of doctor.

Standard of answer:

1. On this time information is got only about pneumonia.
2. For the exception of cancer of lights necessary frequent cytological research sputum, repeated roentgenologic inspection after adequate anti inflammatory treatment, bronchoscopic inspection, with cytological research.

Task № 2 (№ 277).

The sick 46 years appealed to the internist with complaints about the shortness of breath at the insignificant physical loadings, pain after a breastbone, hoarseness voice, cough. Objectively: puffiness of person. In lung clean vesicular breathing. The area of mediastinum of percussion is extended. Pulse – 88 beat/min, rhythmic, arterial pressure is 130/70 mm of mercuria column. The review of otorhinalaryngologist found out small paresis of left vocal cords. At roentgenoscopy of organs of thorax is sharp expansion of scopes of mediastinum due to numeral lymphonoduss in the roots of lungs. With what to differentiate this illness? Additional researches.

Standard of answer:

1. To differentiate the mediastinal form of lung cancer with the lymphoproliferative process of mediastinum.
2. Tomography of mediastinum, at possibility is computer tomography or MRI, puncture biopsy of lymphonoduss of mediastinum.

Task № 3 (№ 278).

A patient 48 years appealed to the internist on an occasion a proof cough. During the month of him treated on an occasion the bronchitis of (expectorant, inhalations,cups). At roentgenoscopy of organs of thorax are the pulmonary fields transparent, extended roots of lung, it is not found out the hearths changes. In 3 months patient of appointmen to pulmonologist, appointed bronchoscopy. In the bronchial tube of middle fate of right lung found out a tumor which to half blocks the road clearance of bronchial tube. Conducted biopsy. Histological conclusion: small low differential to the middle bronchial tube of right. Diagnosis. Plan of treatment?

Standard of answer:

1. Small cell cancer of middle fate of right lung of T1N0M0 2.
2. Begin treatment with chemotherapy, with subsequent pulmonectomy.

Task № 4 (№ 279).

A patient 50 years complain about a general weakness dry cough. A district doctor treated a patient 10 days on an occasion acute respiratory infection, whereupon wrote a patient on work, but symptoms did not disappear. In 2 weeks at the repeated address to the doctor conducted roentgenoscopy of organs of thorax. In the lower lobe of left lights found out the area of darkening размером 2x2 cm with unequal contours. Bronchial tubes are destruction, in strokes with to the bronchial tube is small cell cancer of left lung. Diagnosis. Plan of treatment.

Standard of answer:

1. Low differentiated cancer of lower lobe of lung of 1st T1N0M0. Question in relation to the impression of lymphatic nodes it will be decided after investigation.
2. Begin treatment with chemotherapy, with subsequent pneumonectomy.

Task № 5 (№ 280).

A patient 48 years complain about the permanent fever to 38-39°C, general weariness, bad appetite cough, with sputum. It is ill about month. Treated oneself at a district internist. At first on an occasion acute respiratory infection, then pneumonias. At repeated roentgenoscopy of lung found out the numerous rounded cells of darkening by sizes from 0,5x0,5 to 1x2 cm in both lungs. The increase of supraclavicular nodes is marked on the left. In the past the pulmonary diseases were not ill. Near 7 years suffers by anacidity gastritis. In sputum of BK and cell of tumors not discovered. Previous diagnosis. Differential diagnostics. Plan of treatment.

Standard of answer:

1. Miliary cancer of lung, possibly plural metastases in lungs of anonymous tumor.
2. To differentiate between the cancer of lungs, metastases in lungs and miliary white plague. Excision biopsy of supraclavicular lymphonoduss. Repeated cytological research of sputum, complete inspection of gastroenteric highway, kidney, prostate, on possibility of finding of primary tumor.
3. In the case of verification of primary miliary cancer of lung is the rotined palliative chemotherapy.

Task № 6 (№ 281).

A patient 56 years a few times spoke to the internist and surgeon on an occasion aching pain in the area of left shoulder. There was the set diagnosis: myositis, bronchitis, periostitis. Treatment is thermal procedures massage (sciagraphy of shoulder was not conducted). At a small trauma appeared sharp pain in the area of left shoulder and his deformation. The doctor of the first aid set a diagnosis: pathological break of shoulder. In anamnesis is chronic recurrence pneumonia, at roentgenoscopy of organs of pectoral cavity – darkness in the area of root of lower lobe of left lungs. Uralysis in a norm. Previous diagnosis. How ground diagnosis? Plan of treatment.

Standard of answer:

1. Possibly at the patient of cancer of lower lobe of left lung with the pathological (metastation) break of left humeral bone.
2. Before setting of treatment it is necessary to conduct investigation (tomography of mediastinum, bronchoscopy, cytological inspection of sputum and waters of washings off of bronchial tubes, puncture biopsy of area of break).

3. In the case of verification of cancer of lungs the leadthrough of palliative radial therapy is rotated on the area of break and primary formation and palliative courses of chemotherapy.

Task № 7 (№ 282).

At a patient 33 years at preventive examination local formation is found 2x2 cm in the overhead lobe of left lung with clear contours. Hospitalized in tuberculous dispensary. With suspicion on tuberculosis was operated. Executed sector resection of fabric lung with a tumor. In a week the got histological conclusion is small cell cancer of lung. Plan of subsequent treatment. Prognosis.

Standard of answer:

1. The leadthrough of courses of chemotherapy is rotated.
2. Prognosis is bad.

Task № 8 (№ 283).

Internist of doctor at prophylactic of photoroentgenography at the man of 45 years in the lower lobe of right lung nearer to the pectoral wall on a axillary back line found out the round homogeneous darkening size 2x2 cm without the reactive changes in surrounding fabrics. It is not found out other pathology. Previous diagnosis. Plan of subsequent inspection.

Standard of answer:

1. Peripheral cancer of lower lobe of right lung.
2. Sciagraphy of lung with photoroentgenography of mediastinum, bronchoscopy from cytological research of waters of washings off, if necessary is computer tomography and transthoracic puncture.

Task № 9 (№ 284).

At a man 58 years during 8-10 years a chronic bronchitis became sharp periodically. After acute respiratory infection began to complain about the strong shortness of breath. At roentgenoscopy of organs of pectoral cavity it is found out the decline of transparency of lower lobe of right lung. In a sputum plenty of leucocytes, separate red corpuscles, epithelial cell of atypical, is found as a squamous cancer. What additional inspections must be conducted. Diagnosis. Variants of treatment.

Standard of answer:

1. Necessary bronchoscopy with a biopsy, tomography of mediastinum, if necessary is computer tomography.
2. Cancer of right lung (low lobular, central, squamous).
3. In the case of absence of metastases impression of mediastinum– surgical treatment is rotated in the volume of pneumonectomy. In the case of presence of metastases is leadthrough of chemoradiotherapy.

Task № 10 (№ 285).

Patient 60 years, is often ill pneumonia. Last 2 months feels faint general. A subfebrile temperature sticks to constantly, there was insignificant blood spitting. In a left supraclavicular area found out dense lymphonoduss 2x2 cm. In mediastinum a lot of lymphonoduss. At sciagraphy of lung is local of the diffusion darkening by a size 3 x 4cm

in the lower lobe of right lung. At bronchoscopy found out the tumor of lower lobe bronchial tube, at histological research is squamous cancer of lung. Diagnosis. What type of therapy is rotined?

Standard of answer:

1. Central cancer of right lung with the impression of supraclavicular and mediastinum lymphonoduss.
2. Rotined chemotherapy (radiation of primary local and ways of metastases, courses of chemotherapy).

5. Materials of offer auditorium independent work.

Subject:

Study of indexes of morbidity and death rate on the cancer of lungs in 2008 in the Poltava region.

Subject:

Study of possible dependence of increase of level of morbidity on the cancer of in the Poltava region from contamination of external environment by a mercury.

MD., professor

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