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Кафедра Внутрішньої медицини №3
Факультет VI по підготовці іноземних студентів

ЗАТВЕРДЖЕНО
на засіданні кафедри внутрішньої медицини №3
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Зав. кафедри _____д.мед.н., професор Л.В. Журавльова

МЕТОДИЧНІ ВКАЗІВКИ
для самостійної роботи студентів англійською мовою

з дисципліни «Внутрішня медицина (в тому числі з ендокринологією)
студенти 4 курсу I, II, III медичних факультетів, V та VI факультетів по підготовці іноземних студентів

Пневмонія

Харків 2016

General and microbiological research of sputum, general and microbiological examination of pleural fluid x-ray

Research of sputum helps in diagnostic of the pathological process in respiratory organs, and in some cases to establish its etiology.

Research of sputum start of its examination, it put on white and black background.

1. **Determine the nature, color, konsistents**.

- Sputum slimy, colorless, viscous, found in acute bronchitis.
- Sero sputum: colorless, liquid, foam, occurs in pulmonary edema.
- Mucopurulent, yellow or green, viscous, is chronic bronchitis, tuberculosis and others.
- Pus, homogeneous, poluridke, greenish - with lung abscess in breakthrough.
- Blood: with pulmonary hemorrhage (tuberculosis, cancer, bronchiectasis).
- Mucopurulent intervals blood: in bronchiectasis.
- Sero with blood foam: with pulmonary edema.
- Muco-blood: at infarkt of lung or stagnation in the pulmonary circulation.
- Brown: at hanheren or abscess of lung.

For chronic purelent processes sputum be 3 layers: the top - muco-purulent average - serous, bottom - purulent. Sometimes sputum divided into 2 layers: - serous and purulent.

2. Smell.

Bed: putrefactive decay of tissue (gangrene, cancer) or the breakdown of proteins sputum at his delay in the cavity (abscess, bronchiectasis).

3. Further signs observed in sputum

- Spiral Kurshmana: in short twisted white shadows
- Fibrin clots - and white and red branched elastic movements, which occur when fibrinous bronchitis, sometimes - with pneumonia
- "Lentil" - small greenish-yellow wad consisting calcified elastic fiber, and cholesterol crystals and soaps containing Mycobacterium tuberculosis
- Fuses of Dytryh - similar to "lentils" in appearance, but do not contain Mycobacterium tuberculosis and have malodorous smell when branching (if gangrene, abscesses, bronchitis with pus)
- Grains calcified - observed the decay of old TB lesions
- Spores of aktinomitset - small yellowish grains, like barley mana
- Remnants of necrotic tissue and lung tumors
- Food residues

4.Rreaction medium.

Sputum usually has an alkaline reaction. It becomes acidic and the decay of impurities gastric juice, which allows helps for differentiation sputum with blood from bloody vomiting.

5. Microscopic examination.

Held in nativny as well as colred preparations (in Petri dishes).
May find: red blood cells, white blood cells, spirals of Kurshman, Charcot-Leyden crystals, eosinophils, epithelium (flat, cylindrical flashing), alveolar macrophages (large cells - in 2-3 times higher than white blood cells).

The cells of malignant tumors often fall into sputum if endobronchial tumor grows or decays. In preparation, these cells stand their "atipizm": they are large, with a fair shape, large nucleus, and sometimes multiple nuclei.

Chronic inflammation in the bronchial epithelium that their covered, with metaplazuya, acquires and atypical symptoms may resemble tumors. Because, to determine how tumor cells is only possible in cases of atypical and also polymorphic cells, particularly if they are located on the fibrous basis or together with elastic fibers.

Charcot-Leyden crystals, without colori different sizes, resembling the compass, consist of a protein released by the decay of eosinophils, with more of a stale sputum.

After pulmonary bleeding if the blood is released from sputumm not immediately possible to find crystals hematoyidinu - robmoid formation or yellow-brown color.

For bacterioscopic smear rubbing sputum made between substantive glass. The smear that has become dry, fix slow spending it 3 times through the flame gas burner and colored: search Mycobacterium tuberculosis - by Tsylyem-Nielsen, in other cases - Gram.

6. Research pleural fluid.

In the cavity of a healthy person has a small amount of fluid, which is close in composition to the lymph, which facilitates slip of pleura during respiration. The volume of pleural liquid may increase (effusion) as excited blood and lymph circulation in the lungs - inflammatory exudate (transudat) and inflammatory changes of the pleura (the fluid). Fluid may be caused by an infection of pleural primary clinical symptoms or concomitant with common infections and in certain diseases of the lungs and mediastinum (rheumatism, heart attack, cancer and tuberculosis, Hodgkin's disease, etc.).

Research pleural liquid aims:
1) to determine its nature (transudat, fluid, pus, blood, fluid hylozna);
2) study the cellular composition of the liquid, which makes it possible to decide on the nature of the pathological process, and sometimes (when on finding tumor cells) - and about the diagnosis;
3) in the case of an infectious nature identify pathogen destruction and set its sensitivity to antibiotics.

Analysis of pleural liquid consists of:
1) macroscopic,
2) physical and chemical,
3) microscopic,
4) microbiological
5) biochemical.

The appearance of pleural fluid depends on the cellular and chemical composition:
- Transudat and serous exudate - transparent are slightly
- Clouding of the fluid is the presence of white blood cells (sero-purulent and purulent exudate), erythrocytes (hemorrhagic fluid) drops of fat.
-The nature of the cells is determined by microscopy. Sslightly determine the nature of the breakdown of the ether, the addition of which turbidity disappears.
- Color transudata pale yellow,
- Serozny exudate - from pale to golden yellow, with jaundice - to the rich yellow,
- When mixed with blood - red viddinkom or brownish gray.

- Hemorrhagic effusion, depending on the amount of blood and the period of stay in the pleura may have different colors from pink to dark red and brown.
- If hemolysis effusion is lacquer look.
- Slightly fluid resembling diluted milk.

In the study of chemical-physical determine:
- The total density (the total density of less than 1,015 transudate, often within 1,006-1,012, the total density of exudate - more than 1,015, preferably 1,018-1,022).
- Protein in transudate is fewer than the fluid, but not more than 3% (usually 0.5-2.5%) in fluid - 3-8%.
- Composition almost protein fractions exudate such as serum; in transudati - dominated albumin, fibrinogen it almost completely absence, so it coagulates. In fluid fibrinogen less than levels (0.05-0.1%), but enough for spontaneous collapse of most of exudates. The content of total protein in transudati often is 4-5%; in such cases differentiation it with exudate apply additional tests:
o - Rivalta test - with the addition of acetic acid
o - test Lukerini - with the addition of hydrogen peroxide
Both samples to determine the presence of fluid serozomutsin - mukopolisaharyds complex that is missing in transudate.

In the microbiological study transudate is usually sterile, but may be infected during many puncturs. Fluid can be sterylny (eg, rheumatoid pneumonia, lung cancer). Serous fluid in tuberculous mycobacteria determine the etiology Bacterioscopic fails,, but in the crops of vaccination punctate or guinea pigs can sometimes get positive results.
In pleurisy, which are dictated by purelent flora, it is determined by Bacterioscopic Coating method program. If not, you need to carry out sowing.
For the treatment of patients revealed bacteria tested for sensitivity to antibiotics.

X-ray of the lungs.

The most common method is X-ray of the lungs, which allows to determine:
1) transparency of the lung fields,
2) fire sealing (infiltration, fibrosis, tumors)
3) cavities in the lung tissue,
4) foreign body in the trachea and bronchi,
5) the presence of fluid or air in the pleural cavity,
6) severe pleural adhesions and mooring.

Renthenokimohrafiya.
With this technique to a cassette of film X-rays on the way that the X-ray tube to fall from everywhere patient's body, a special set of lead grille with horizontal slit. During the photo grid

moves a short distance of circuit body that investigated, as well as the very body during this time performs a movement parallel to the hole lattice, then the film circuit formed body is not flat, but as the dentate line.

For amplitude teeth and their form may determine the strength of abbreviations and assess their nature (eg, heart).Tomography.

Allows layered x-ray of the lungs. It is used for a more thorough diagnosis of tumors, as well as small infiltrates voids and cavities. When imaging through movement while shooting a defined speed X-ray tube on the tape appears clear image only those structures that are located on a single depth, defined earlier.

Shadows of organs and structures located on a smaller or greater depths, formed greased and not imposed on the main image. Latest method is computer tomography.

Bronchography.

It is used to study the bronchi. Patient after pre-anesthesia airway passage in the bronchi injected kontrast (yodolipol), which delays the X-rays. Then remove X-ray of the lungs, which formed a clear image of the bronchial tree. This method can detect bronchoectasis, pulmonary abscesses and cavities, bronchoconstriction tumor.

Fluorohrafiya.

There X-ray of the lungs in which the photo is made in small format film. Used for passing mass prophylactic examination of the population.

Radiographic data at acute pneumonia.

X-ray picture depends on the type of pneumonia:
- With focal pneumonia is defined unsharp eclipse
- When the discharge pneumonia - spots, usually in the lower lungs; of the enlarged lymph nodes May be extended shadow root of the lung
- With lobar pneumonia radiological signs depend on the stage of the disease - lung picture of gain during high tide, the appearance of lesions eclipse, which then merged. Shadow formed corresponding to the fate of the lungs. Restoration of normal pulmonary transparency occurs gradually and lasts 2-3 weeks. Dynamics of radiological changes depends on the duration of treatment.

Questions :
1. What are the most important criteria of general research of sputum?
2. What are main kriterias of microbiological studies of sputum?
3. What is the nature sputum with various respiratory diseases?
4. What substances can be found in sputum?
5. What substances can be found by microscopic examination of sputum i?
6. What are the most important criteria for general research pleural fluid?
7. What are the most important criteria for microbiological examination of pleural fluid?
8. Laboratory signs of fluid.
9. Laboratory signs of transudat

RECOMMENDED BOOKS:

1.Clinical Pulmonology - 2016 (The Clinical Medicine Series Book 19).-343h.

2 .Pulmonary Disorders [Sect. 5, Merck manual] 2010.-123p.

3.Pulmonary Pathophysiology : The Essentials by (author) John B. West 2012 .-2(

4.Davidson's Principles and Practice of Medicine 22nd Edition .-Walker, Brian R., FRSE.-2014.-1312p.

Website of the departament: http://www. vnmed3.kharkiv.ua/,

Методичні вказівки склала: доц.. Котовщікова Н.М.

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З доповненнями (змінами).

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