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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

Бронхіальна астма

Харків 2016

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 infarktof 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 calcifiedelastic 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.

Functional studies of lung and their changes

Spirohrafiya- graphic method of registration of changes in the lung volume respiratory movements of the person. This method allows to determine the static and dynamic parameters characterizing ventilation.

Static or anatomic lung volumes reflect the elastic properties of the lung and chest wall. They explore the slow filling of the lungs with air from one level to the other fixing in extreme positions. Static lung volumes include tidal volume, expiratory reserve volume, residual volume of the lungs, the total capacity of the lungs, lung vital capacity, functional residual capacity of the lungs and so on.
Vital lung capacity (VC) - is the maximum volume of air that can be exhaled slowly after a deep breath (total respiratory volume, reserve volume inspiratory and expiratory). Normally this figure is 3000-5000 ml. Since VC decreases as the restrictive pathology progression, it allows you to assess the dynamics of the disease from restrictive lung disorders and treatment results.
Respiratory volume (ML) - the amount of air that the patient breathes in and exhales during normal breathing. Normally this rate is 500-800 ml. After a calm exhalation maximum patient exhales deeply, this time measured expiratory reserve volume (ml ROvyd = 1000-1500). After a relaxing breath the patient takes a deep breath as much as possible, this time measuring reserve volume inspiratory (1000-2000 = ROvd mL).
The residual lung volume (RV) - the amount of air remaining in the lungs after exhalation maximum depth (1000-1500 mL). The total lung capacity (TLC = VC + RV = 4500-7000 mL).
The functional residual capacity (FZYE) - the amount of air remaining in the lungs at the end of a normal expiration (RV + = ROvyd 2000-2500 mL). Reduced lung elastic traction with emphysema leads to increased TLC. When edema, fibrosis intersytsialnomu and other restrictive disorders TLC reduced.
Dynamic lung volumes characterized in lung ventilation and speed parameters (forced expiratory curve analysis).
Minute volume of breath (MVB) - the amount of air in the lungs ventilated for 1 minute, the main indicator of ventilation, the rest range from 6 to 8 l / min. MVBby spirohram determined by summing up the amounts of respiratory movement during quiet breathing,
Maximum ventilation (MVL) - the amount of air in the lungs ventilated for 1 minute of intense breathing, normal is 70-150 l / min. In disproportionately low **MVL** should be suspected in a patient neuromuscular weakness. Defining **MVL** important during preoperative examination, because it reflects the severity of airway obstruction and respiratory reserve and condition of the respiratory muscles.

To determine the speed performance inspected after offering quiet exhalation breathe deeply and then make as fast and deep exhalation. In a healthy person forced expiratory duration is typically 3-5 seconds, and in patients with lung disease, it is much smaller.

Forced vital capacity lungs (FVC) - the amount of air that can be exhaled in the patient as quickly and completely exhale after maximum inhalation previous. FVC normally 100-200 ml less than VC, that VC is 70-80%. In obstructive diseases of vital capacity much greater than FVC.

Forced expiratory volume in the first second (FEV1) - the volume of air exhaled with the maximum speed exhale in the first second after a full breath. Determined by the FVC curve. The value of FEV1 affect the mechanical properties of the lung tissue, expiratory muscle strength, resistance to respiratory tract. FEV1 expressed as a percentage of vital capacity (FEV1 / VC) or FVC (FEV1 / FVC) and normally exceed 75-80% of vital capacity.

The maximum (peak) volume expiratory flow rate (POShvyd.) - Maximum speed of the air during forced exhalation, which is calculated by the FVC curve. To determine POShvyd. curve should be divided into four parts, to measure the volume of air in the range between 25, 50 and 75% of capacity, and knowing the speed of the belt Spirographs, calculate time of investigate expiratory air volume. The rate of air flow 25 = 75% of FVC reflects the state of air conduction in the bronchi of medium and small caliber. Reducing POShvyd. describes the type of obstructive ventilatory failure due to bronchospasm, mucosal edema or other causes.

The lumen airway volume and speed of air flow directly depend on the lung volume, so they are the most at the beginning of expiration (at VC) and decreases as approaching evils. When inhaling negative intrathoracic pressure helps to maintain the lumen of the airways when exhaling, even more so when forced, the airways narrow due to the positive intrathoracic pressure. Such fluctuations diameter airways causing faster flow on inspiration than expiration. In COPD and asthma expiratory volume velocity is reduced further due to bronchospasm, the presence of thick secretions, reducing the elasticity of the lungs. In restrictive lung pathology increased rigidity of the lung tissue contributes to the maintenance of large airway lumen, resulting volumetric rate often exceeds the rate at constant lung volumes.

To draw conclusions about the reversibility of obstructive process (asthmatic component), repeat spirometry after inhalation of bronchodilator. With the increase in FEV1 of more than 15% of the cases - test for reversibility of bronchial obstruction is positive.

Pneumotahometry - a method study of respiratory function, which is the graphical register the speed of the airflow (curve "flow-volume") at quiet breathing of the patient and in the discharge of some breathing exercises. After a deep breath and forced expiratory diagram form in healthy resembles a triangle, normal inspiratory portion of the curve is symmetrical and curved, expiratory - linear.

The method allows to measure the extensibility of lungs, breath work, volumetric rate at quiet and forced breath, analyze the relation "pressure-volume", "pressure-flow" and "flow-volume". Pneumotahometry particularly useful for identifying lesions of the larynx and trachea, can distinguish between fixed (tracheal stenosis) and variable (tracheomalacia, or paralysis of the vocal hords) obstruction of the upper airways. At steady obstruction of the upper and lower parts of the diagram flattened, its contours are close to rectangular, airflow is limited as the breath and exhale.

When restrictive disease (sarcoidosis, kyphoscoliosis) curve "flow-volume" narrowed by reducing lung volumes, but its shape remains unchanged. Increased elastic thrust lung and / or chest supports in these cases the airways open. In COPD, asthma all volume reduced rate prevails extension of expiration. FEV1 <75% of FVC recorded "emphysematous intsyzura."

Peak flowmetria - method to estimate the maximum expiratory flow (MEF) with a special handheld device as an in-patient and outpatient basis. The method is very simple to use, available for children from 5 years. It allows you to monitor the severity, daily fluctuations in lung function, response to therapy, to identify the triggers (eg, physical activity) and / or disease inducers (eg allergens to which the patient is contacted at home or at work). It is important to set

the best rate fluctuations for the patient and minimal daily fluctuations when prescribed treatment is quite effective. Monitoring lasts 2-3 weeks, the patient must register indices of refraction at least twice a day. If the patient uses bronchodilators, refraction shall be measured before and after the use of drugs. The best outcome for the patient is the highest value of refraction, which is received at a time when the disease was located under control. Rejection of refraction can be calculated using the formula:

Daily deviation = biggest MEF - MEF least × 100/the largest MEF

The deviation of the daily measurement of refraction is a reliable indicator of stability and / or disease severity. If the patient the highest value in the morning measuring less than 80% of what is projected on the background of adequate therapy bronchodilators, and / or daily fluctuation exceeds 15%, it should appoint more intensive treatment.

Questions :

1. The value changes of respiratory function in the diagnosis of airway problems.
2. Key figures spirography and their changes in diseases of the respiratory system.
3. Indicators for peakflowmetria and their changes in diseases of the respiratory system.
4. Indicators for pneumotachometry and their changes in diseases of the respiratory system.
5. What are the most important criterias of general sputum test?
6. What are the most important criterias of microbiological studies of sputum?
7. What is the character of sputumin patients with various respiratory diseases?
8. What substances can be found in sputum?
9. What are the most important criteria for general research of pleural fluid?
11. What are the most important criteria for microbiological examination of pleural fluid?
12. Laboratory signs of exudate.
13. Laboratory signs of transudate.

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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