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A CLINICAL CASE OF PNEUMONIA IN THE ELDERLY

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КЛИНИЧЕСКИЙ СЛУЧАЙ ПНЕВМОНИИ У ПОЖИЛЫХ ЛЮДЕЙ

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Внебольничная пневмония оказывает существенное влияние на лиц пожилого возраста, которые страдают чаще и имеют более серьезные последствия по сравнению с молодым населением.

В статье приведен клинический случай негоспитальной пневмонии у пожилых людей. Пример клинического случая освещает особенности пневмонии, диагностический подход и антибактериальную терапию у пациентов пожилого возраста. Подчеркивается значение профилактики, а именно модификации образа жизни и вакцинации.

Ключевые слова: внебольничная пневмония, пожилые люди, клинический случай, антибактериальная пневмония.

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Community-acquired pneumonia (CAP) has a significant influence on elderly individuals, who are affected more often and with more severe consequences compared with younger populations.

A clinical case of a 66-year-old man with complaints specific for CAP is discussed. The clinical diagnosis of CAP in the lower lobe of the right lung, respiratory failure (RF) II was made on the basis of the chest X-ray data (focal infiltration of the lung tissue), patient's complaints of fever, cough with mucous sputum, history data (acute onset of the disease, association with overcooling; development of disease in out-hospital setting); inspection data (focus of weakening of vesicular breathing, the presence of moist fine bubbling rales during auscultation in the lower part of the right lung), blood test results (stab shift, elevated ESR). Level of RF was established on the basis of RR (24/per min).

Patient management includes an antibiotic combination of ampicillin-sulbactam 1.5 g IV 3 times per day plus azithromycin 500 mg orally daily for 10 days. We recommend CBC and X-ray control (at 7 to 12 weeks) after treatment.

The example of this clinical case highlights the features of pneumonia, diagnostic approach and antibacterial therapy in elderly patients. The significance of prevention namely lifestyle modification and vaccination is emphasized.

Key words: community-acquired pneumonia, elderly, clinical case, antibacterial therapy.

According to the guidelines pneumonia is defined as a form of acute respiratory infection that affects the lung parenchyma with high morbidity and mortality worldwide [1]. Community-acquired pneumonia (CAP) is the most frequently encountered

pathological condition in medical practice and the second most ordinary cause of hospitalization and the most common infectious cause of death. The course of pneumonia in advanced age patients can be aggravated compared with younger ones be-

cause of the presence of comorbidities such as chronic obstructive pulmonary disease, other forms of chronic lung disease (e. g., bronchiectasis, asthma), chronic heart disease (particularly congestive heart failure), stroke, diabetes mellitus, malnutrition and immunocompromising conditions. Moreover this group



of patients is susceptible to pneumonia due to their predisposition to be less mobile and well-nourished than younger population [2].

A 66-year-old patient, retired, complains of fever up to 38 °C, coughing up little amount of white sputum, headache, shortness of breath, and weakness. The patient got ill acutely after overcooling. He suffers from coronary artery disease (CAD): diffuse atherosclerosis (for 3 years), arterial hypertension (for 29 years with the highest level of blood pressure (BP) 176/98 mmHg), and chronic heart failure (CHF) II functional class by NYHA. Therefore, he received routine therapy with the following medications: Perindopril 5 mg, Hydrochlorothiazide 12.5 mg, Simvastatin 20 mg, Aspirin 75 mg. The patient denies smoking, alcohol abuse, and contacts with tuberculosis and infectious diseases carriers.

Objectively during the examination: the skin is pale, moist, cyanosis of the lips. Body temperature is 37.8 °C. The tongue is whitish. In the lungs, weakened vesicular breathing, multiple moist finely bubbling rales are heard in the lower part of the right lung. Respiratory rate (RR) is 24 per minute at rest. Heart sounds are muffled, rhythmic. Heart rate (HR) is 90 beats per minute, BP — 110/70 mm Hg. Liver protrudes 1 cm below the edge of the right costal margin, pitting edema of both legs. Other physical examination findings are without visible pathological abnormalities. Complete blood count (CBC): hemoglobin — 146 g/l, erythrocytes — $4.7 \cdot 10^{12}/l$; leukocytes — $10.9 \cdot 10^9/l$, band neutrophils — 12%, segmented neutrophils — 77%, erythrocyte sedimentation rate (ESR) — 30 mm/h. Urine analysis: density-1012, protein — traces, leukocytes — 2–4 per high power field. Blood biochemistry: ALT —

38 U/l; AST — 35 U/l, urea — 9 mmol/l, creatinine — 120 μ mol/l. ECG — sinus rhythm, regular, signs of left ventricular (LV) hypertrophy. Chest X-ray: focal infiltrate in the basal part of the right lung. Heart ultrasound: moderate dilatation of the LV cavity, hypertrophy of the LV wall up to 1, 2 cm, ejection fraction (EF) — 40%. The clinical diagnosis of CAP in the lower lobe of the right lung, respiratory failure (RF) II. CAD. Diffuse atherosclerosis. Essential arterial hypertension II stage, 2 degree, hypertensive heart (LV hypertrophy). CHF 2A, II functional class by NYHA with non-preserved function of LV (40%) was made.

The significant importance in the diagnosis of CAP commonly belongs to demonstration of a new infiltrate on a chest X-ray in a patient presenting with an acute respiratory illness [3]. The diagnosis of “community-acquired left-sided lobar pneumonia” in our patient was made on the basis of the chest X-ray data (focal infiltration of the lung tissue), patient’s complaints of fever, cough with mucous sputum, history data (acute onset of the disease, association with overcooling; development of disease in out-hospital setting); objective examination data (focus of weakened vesicular breathing, moist fine bubbling rales in the lower part of the right lung), CBC data (leukocytosis with left shift, elevated ESR). Level of RF was established clinically on the basis of RR (24/per min), it should be confirmed by arterial blood gases.

The following clinical syndromes can be distinguished in this patient: 1) systemic inflammatory response syndrome (SIRS) takes place if at least 2 of the 4 criteria are present (RR higher than 20 breaths/min and white blood cell count with 10% band forms) [4]; 2) syndrome of lung

tissue consolidation (focus of weakened vesicular breathing, moist fine bubbling rales during auscultation in the lower part of the right lung, chest X-ray data (focal infiltration of the lung tissue)); 3) syndrome of respiratory failure (clinically, should be confirmed by arterial blood gases); 4) syndrome of arterial hypertension and congestive heart failure.

The initial approach to the treatment of CAP is based on risk stratification by CURB-65 pneumonia severity score in order to evaluate if the patient should be treated in an outpatient or inpatient setting. This score includes such parameters as C = Confusion, U = Uremia (BUN greater than 20 mg/dL), R = Respiratory rate (greater than 30 per min), B = B. P (BP less than 90/60 mmHg) and age greater than 65 years [5]. Our patient has 2 points (BUN — 25 mg/dL, age — 66 years old) which means that patient should undergo the hospital admission for treatment.

The main goals of treatment for CAP are to eradicate the infection, reduce morbidity, and prevent complications. It depends generally on the empiric use of antibiotic regimens that target both typical for elderly population pathogens (e. g., *S. pneumoniae*, *H. influenzae*, and *M. catarrhalis*, *Legionella pneumophila*, *M. pneumoniae*, and *C. pneumoniae*) [6]. Key factors influencing the choice of a specific regimen include patient comorbidities (e. g., chronic lung, liver, heart, or renal disease, diabetes mellitus, cancer, and/or alcohol dependence), recent antibiotic use (i. e., within the last three months), and local macrolide and doxycycline resistance rates [7]. The presence of risk factors in our patient specifically age more than 65, CHF



justifies the appointment of combination of ampicillin-sulbactam 1.5 g IV 3 times per day plus azithromycin 500 mg orally daily for 10 days. In hospitalized patients with nonsevere CAP, the treatment recommendation is a respiratory fluoroquinolone or a beta-lactam plus a macrolide regimens but beta-lactam plus macrolide antibiotic combination can be preferable due to some significant advantages of it. Firstly, many observational studies have suggested that beta-lactam plus macrolide combination regimens are associated with better clinical results in patients with CAP, possibly due to the immunomodulatory effects of macrolides. Furthermore, the severity of adverse effects and the risk of resistance in colonizing organisms are generally thought to be greater with fluoroquinolones than with the combination therapy regimens. In conclusion, the use of fluoroquinolone in areas with high prevalence of tuberculosis, as Ukraine, is under the question due to the perception that they contribute both to delays in the diagnosis of pulmonary tuberculosis and to the emergency of fluoroquinolone-resistant strains of *Mycobacterium tuberculosis* [8]. The duration of therapy was based on the patient's clinical response to therapy. Treatment duration of patients with CAP and chronic comorbidities generally requires 7 to 10 days of therapy. Evaluation of the effectiveness of antibiotic therapy should be carried out in 48–72 hours from the start of the treatment. The main criteria for efficiency in these terms should be considered as a reduction in the severity of intoxication and a decrease in body temperature, the absence of signs of respiratory failure. The clinical recommendations include dynamic observation and CBC and X-ray

control for some groups of patients after treatment. It is worth noting that most patients with clinical resolution after treatment do not require follow-up chest radiography. The chest radiography should be performed at 7 to 12 weeks following treatment in patients > 50 years of age, particularly in males and smokers in this age group [8]. During the course of treatment, the general condition of our patient improved in the form of reducing the manifestations of the SIRS and lack of the significant complications. The antibiotic therapy was effective and did not require any changes, and our patient recovered after 10 days of treatment.

Severity and extension of pneumonia, inadequate response to infection, and low functional status are the principal factors associated with mortality in older patients [9]. The most frequent complications in people with advanced age of bacterial pneumonia are exacerbation of preceding comorbidities, respiratory failure, multiple organ dysfunction syndrome, coagulopathy and sepsis. There are three primary aspects for the prevention of CAP such as smoking cessation if appropriate, influenza vaccination for all patients, pneumococcal vaccination for at-risk patients. In elderly patients, special attention should be paid to patients with swallowing disorders, malnutrition, high rate of comorbidities, poor functional and bedridden status as predisposing factors for CAP. Enhanced oral hygiene and regular physical activity could reduce CAP incidence [6]. Current guidelines recommend vaccination against *S. pneumoniae* and influenza in all patients' =65 years. Since our patient is 66 years old and has an associated comorbid pathology in the

form of CHF with non-preserved function of LV (40%) he is at risk and in order to prevent the development of pneumonia in the future, we recommend him vaccination against *S. pneumoniae* and influenza once a year according to current guidelines.

Pneumonia can be lethal in case if proper treatment is not prescribed instantly. Pneumonia-causing agents, patient's risk factors such as age, history of allergies and chronic comorbidities should be taken into consideration during choosing the antibiotic treatment. The influenza vaccination and pneumococcal are effective measures for the prevention of pneumonia in the elderly.

Ключові слова: позалікарняна пневмонія, люди похилого віку, клінічний випадок, антибактеріальна пневмонія.

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DRUG MANAGEMENT OF PATIENT WITH HEART FAILURE AND CARDIAC PACEMAKER

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МЕДИКАМЕНТОЗНАЯ ТЕРАПИЯ ПАЦИЕНТА С СЕРДЕЧНОЙ НЕДОСТАТОЧНОСТЬЮ И КАРДИОСТИМУЛЯТОРОМ

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Цель исследования — рассмотреть вопросы ведения пациента с сердечной недостаточностью и кардиостимулятором. Медикаментозная терапия пациента с сердечной недостаточностью и кардиостимулятором представлена в этой статье на примере клинического случая. Выход длительности интервала QRS за пределы нормального диапазона после установки кардиостимулятора показан как один из важных факторов, определяющих тактику лечения сердечной недостаточности.

Ключевые слова: сердечная недостаточность, кардиостимуляция, кардиальная ресинхронизирующая терапия, электрокардиография, медикаментозная терапия.

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The **aim** of the study: to consider the management of patients with heart failure (HF) and cardiac pacemaker. HF remains one of the most important problem areas of modern medicine and has a huge social significance due to the widespread, steadily progressing, prognostically unfavorable course and high economic losses. Treatment of HF includes interventions in lifestyle, drug therapy and one of the modern methods is cardiac resynchronization therapy. Pacemakers are well-established therapies of severe bradyarrhythmias, and one of them is complete atrioventricular block.

Our patient: The woman, 78 years old, with complaints of oedema of the shins, cough and dyspnea at minimal exertion, absent at rest. Anamnesis is remarkable significant for arterial hypertension, myocardial infarction (2011, 2014), AV block of IIIrd degree with Adams-Stokes syndrome. 23.08.17 the cardiac pacemaker was implanted, in the DDDR pacing mode. After implantation of cardiac pacemaker the symptoms were not completely controlled, and patient was hospitalized to the cardiology department to correct the treatment, EF=48%.

Conclusion. Cardiac pacemaker in the presence of possible solutions to the problem of arrhythmias and HF it does not cancel, but modifies the medical support of patients. To prolong patient's life, it's very important to establish a timely diagnosis and prescribe appropriate therapy.

Key words: heart failure, cardiac pacing, cardiac resynchronization therapy, electrocardiography, drug management.

