



## **CORRECTION OF HEMODYNAMIC DISORDERS IN PATIENTS WITH OUTSIDE BILATERAL TOTAL PNEUMONIA**

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### **Anatomy**

In patients with VP (community-acquired pneumonia), similar studies are numerous and contradictory. In this case, disorders of the central hemodynamics are considered without evaluating the relationship to acute inflammatory endotoxemia (About RE) and EP abnormalities in the lungs on the background of the catecholamine hemodynamic support, so IL disorders of the central hemodynamics in patients with community-acquired pneumonia of total bilateral performed simply, without taking into account the main causes of violations.

Central hemodynamics is determined by several variables, the value of which is very variable, and the relationship between them has an ambiguous character of dependence, which reduces the significance of the absolute values of the parameters. In conditions of multiple dysfunctions, the absolute values of the indicators give way to their dynamics and comprehension.

The analysis of literature data indicates that hemodynamic disorders are described only on the basis of SI, which does not reflect the complexity of hemodynamic disorders observed in intensive care clinical practice.

**Key words:** Community-acquired pneumonia, hemodynamic disorder, nosocomial pneumonia, hypokinetics, eukinetics, hyperkinetics.

### **Relevance**

Community-acquired pneumonia (CAP) is a common infectious pathology of the respiratory tract with a high incidence rate. In intensive treatment (IL) of CAP patients, the etiological and symptomatic directions are traditionally preferred. Respiratory support is an indispensable element of CAP therapy, ranging from simple oxygen therapy methods to total mechanical ventilation (ALV). Respiratory support methods are quite often focused on maintaining external gas exchange at the cost of inevitable damage to the endotracheal and alveolar epithelium, which ultimately leads to the spread of the inflammatory process in the lungs. The forms of central hemodynamic disturbances are diverse and depend not only on the severity of the course of the disease, but also on a number of aggravating





factors that ultimately determine the prognosis and outcome of patients with CAP. In patients with CAP, such studies are numerous and contradictory.

### **Purpose of the Study**

Optimization of intensive treatment of hemodynamic disorders in patients with community-acquired bilateral total pneumonia on the basis of studying the relationship of circulatory disorders with acute inflammatory endotoxemia and ventilation-perfusion disorders in the lungs.

### **Research Objectives**

To systematize the types of central hemodynamic disorders in patients with community-acquired bilateral total pneumonia.

### **Materials and Methods of Research**

A retrospective prospective study was performed in 112 patients with community-acquired bilateral total pneumonia. To solve the assigned tasks, patients who met the inclusion and exclusion criteria were divided into two groups - comparison and observation. Each group of patients, depending on the outcome of the disease, was divided into two subgroups - the first (survivors) and the second (deceased).

### **Inclusion Criteria**

Age 18 -74 years; community-acquired bilateral total pneumonia; acute respiratory failure; violation of central hemodynamics, requiring adrenergic support.

### **Exclusion Criteria**

age <18 years old or> 74 years old; patients with disorders of central hemodynamics, resistant to cardiotonic drugs of non-glycosidic structure - dopamine and  $\alpha$  (3 - adrenomimetics - adrenaline; nosocomial pneumonia; primary heart failure; chronic lung diseases; severe endocrine pathology (decompensated diabetes mellitus, obesity grade II and higher) In the comparison group, IL of hemodynamic disturbances was carried out taking into account the generally accepted types of central hemodynamic disturbances based on changes in SI only (hypokinetic, eukinetic, hyperkinetic). In patients in the observation group, the correction of hemodynamic disturbances was assessed depending on the value of SI, IOPSS and BPav. And was distributed according to nine types of disorders. The study was carried out on the basis of the SamMI clinic 1. Based on the analysis of medical records of 112 patients and 50 functional and biochemical parameters recorded in a specially developed universal





card of an individual examination of a patient with bilateral total pneumonia, a comparative study of indicators of central hemodynamics, the degree of dissociation of V-P relations in the lungs, OVE was carried out. When compiling the map, anamnesis data, the clinical picture of the disease, the results of instrumental research methods (chest x-ray, electrocardiography (ECG), echocardiography (EchoCG), laboratory methods for examining blood and urine, standard for this disease) were taken into account. In addition, the clinical features of the course were assessed. community-acquired bilateral total pneumonia and calculated the criterion of the relationship of the listed parameters. The aim and objectives of the study determined the division of functional and biochemical parameters into three groups:

*The first group of indicators* characterized the severity of the acute inflammatory response (Systemic inflammatory response syndrome, SIRS) based on the criteria revised by the sepsis committee of the Russian Association of Specialists in Surgical Infection (RAAS). SIRS was determined by the presence of three of the listed clinical and laboratory signs. The fourth symptom - tachycardia in patients with community-acquired bilateral total pneumonia - is not only a manifestation of an active inflammatory process in the lungs, but is also a consequence of impaired pulmonary gas exchange, which indicates a complex cause of tachycardia as a criterion for SIRS in patients with pneumonia.

In addition, the strengthening of the pulmonary pattern is determined, due to inflammatory changes in the interstitial tissue; it is possible to identify atelectasis resulting from blockage of the bronchi with a mucous plug. It should be noted the delayed-inert development of the X-ray picture in community-acquired bilateral total pneumonia, in comparison with the general intoxication manifestations of severe OVE.

### **Research Results and Discussion**

In the study of indicators of central hemodynamics, ventilation-perfusion relations in the lungs and inflammatory endotoxemia at the stages of intensive treatment of patients with community-acquired bilateral total pneumonia, both in the comparison group and in the observation group, a relationship was revealed. However, there is a high and positive correlation between the type of CG disorder and OVE ( $r = 0.7$ ,  $p < 0.05$ ), as well as the type of central hemodynamic disorder and the severity of V-P relations in the lungs ( $r = 0.6$ ,  $p < 0.05$ ) was noted in the observation group. The systematization of the types of central hemodynamic disorders in the study groups is different and the number of parameters is incomparable, however, they are united by





one element of central hemodynamics - SI, the general pathological process and the outcome of the disease.

In the retrospective group of patients (comparison), the types of central hemodynamic disorders were established on the basis of recommendations, according to which two types of hyperkinetic and hypokinetic were identified. In patients of the comparison group of the first subgroup (survivors), central hemodynamic disorders were of the hyperkinetic type 26 (46%), in the second (deceased), the hypokinetic type was 30 (54%). The eucinetid type of central hemodynamics was regarded as the final positive IL result in the surviving patients.

In patients of the second group (observation), the type of central hemodynamic disturbance was determined on the basis of clinical experience and the results of previous department studies obtained in the study of central hemodynamics in critically ill patients of various etiologies.

### Conclusions

Nine types of central hemodynamic disorders are distinguished in patients with community-acquired bilateral total pneumonia. Surviving patients in 77% of cases there is a decrease IOPSS  $< 1360 \text{ dinhsekhs m}^{-5} \text{ um}^2$ , increase  $SI > 3$  and  $6 \text{ l / min / m}$  decrease in MAP.  $< 80 \text{ mm RTST}$ , the second occurrence frequency is observed type exhibiting increased IOPSS  $> 2300 \text{ dinhsekhs m}^{-5}$ , a decrease in  $SI < 2.8 \text{ l / min / m}$ , a decrease in MAP.  $< 80 \text{ mm RTST}$  - 21% of cases, while patients who died hypokinesia -  $SR < 2.8 \text{ l / min / m}$  at a IOPSS  $< 1360 \text{ dinhsekhs m}^{-5}$ , MAP.  $< 80 \text{ mm Hg}$  in 100% of cases... Other types of central hemodynamic disorders were rare and amounted to 3% in total, which had no practical significance.

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