



The Problem of Acute Nonspecific Inflammation of Lung Tissue in the 21st Century

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Our actions in response to current events, our decisions that we make to protect ourselves and withstand sudden disasters and trials, directly depend on the level of our knowledge and understanding of the phenomena occurring. This approach is a logical reflection of our orientation in the environment and serves as an explanation for our reaction and subsequent actions to a sudden change in the daily situation. Therefore, when in ancient times people did not know about the causes of the origin of such phenomena as, for example, thunder and lightning, they prostrated themselves with fear, explaining these phenomena to themselves with the help of their own imagination and the most incredible mystical assumptions.

Today, in the twenty-first century, science has reached an unprecedented depth of knowledge and allows us to solve practical problems that not so long ago seemed to be from the world of fiction. In modern conditions, when professional training is at the forefront of scientific research, and any information on a topic of interest is easily accessible, it is impossible to understand the logic of specialists in certain fields and topics in which a set of criteria for proposed assessments and conclusions focuses only on one of the characteristics of a common problem, more resembling a system of assumptions than a comprehensively substantiated analysis of phenomena.

Such a casuistry in modern medicine, where the approach to current events and solving current problems does not take into account a number of important factors and signs, losing the logic of its justification, is the problem of acute nonspecific inflammation in the lungs (ANSIL). If you do not go into a deep and comprehensive analysis of the transformations observed in this section, then the assessments and interpretations disseminated in the media space look quite convincing even for those who have a medical education but do not have special training in this section. Therefore, for example, the emergence of the SARS-CoV-2 pandemic is presented as a sudden misfortune, from which modern medicine did not have reliable and effective means of countering and providing assistance, and, therefore, this phenomenon should be considered as an unexpected surprise of nature. Such an idea of this event and the unenviable role of medicine during the peak of morbidity corresponds not only to widespread sentiments and assessments, but also to the actual results that accompanied the entire period of this disaster. However, before looking for the origins of this phenomenon in the so-called conspiracy theories and even in global warming, which is already being discussed as a possible cause, it is necessary to conduct the most objective and comprehensive assessment of the role of medicine itself in the series of observed events.

If we consider this event from this angle, then the reaction of specialists to the failure of their own therapeutic efforts to help the sharply increased number of patients with coronavirus infection will be understandable. It was during this period that an unprecedented series of publications appeared in professional medical journals, the authors of which share their feelings of powerlessness and even fear in the face of a sudden ordeal (1-4). However, the deeper reason for these depressive moods is that the long-term hope, laid down from the bench of the institute and

unchanged over the past decades, despite the change in basic conditions, to consider antibiotics as the main therapeutic agent for inflammatory processes suddenly turned out to be inappropriate when the etiology changed dramatically in relation to viruses. Medicine did not have ready-made adequate replacements and solutions for such a turn of events, which, first of all, had a psychoemotional effect on professionals who suddenly lost the usual stereotype of work.

The situation with the provision of medical care to a large number of patients with coronavirus inflammation of the lung tissue, observed during the pandemic, was characterized in wide usage, including in the professional sphere, as the rapid spread of a sudden highly virulent infection, against which medicine had no adequate counteraction. Therefore, the possibility of providing assistance to such patients began to be discussed at the level of supportive and auxiliary means of treatment. However, if we look at the immediate background of this event, it becomes quite obvious that such statements should be considered either as guile or as an inadequate analysis of the foundations of the observed phenomenon.

Firstly, experts on the problem of respiratory diseases have long expressed concern about the fact that the number of viral pneumonia is growing, which accounted for almost half of the cases of this nosology in the world a couple of decades ago (5-7). At the same time, coronavirus was already not only known to modern medicine as a possible pathogen, but also caused at least two major epidemics, SARS and MERS, with severe lung damage and high mortality, and a direct analogy of the first of these epidemics with the nascent pandemic gave the latter the code name SARS-CoV-2 (8). In this regard, it is at least not entirely tactful to talk about the suddenness of the event, since almost twenty years have passed, during which scientific and practical medicine did not attach due importance to the observed trend. Although, on the other hand, attention should be paid to the foresight of some microbiologists and pharmacists who were able to lay the foundations of future vaccines for the prevention of coronavirus infection in advance.

Secondly, the deformation of professional ideas about the essence of ANSIL, which developed under the didactic influence of the exaggerated role of antibiotics in the treatment of these diseases, has not disappeared anywhere, continuing to determine the strategy of the basics of medical care. Huge resources were spent and many years of efforts were made in attempts to achieve early and reliable diagnosis of pathogens of acute pneumonia (AP), before only in recent years experts began to recognize the futility of such studies and recommend the empirical use of antimicrobials (9,10). However, these recommendations apply only to bacterial forms of AP. Only blind faith in the phenomenal therapeutic ability of antibiotics can explain their almost total use in patients with COVID-19 pneumonia, despite the fact that concomitant microbial infection has been detected only in isolated cases (11-15).

Thirdly, speaking of blind faith in the phenomenal ability of antibiotics in the treatment of inflammatory processes, one should not forget that their activity extends only to certain types of microorganisms and does not directly affect the mechanisms of the inflammatory process. This feature of antibiotics has been known since their introduction and remains unshakeable to the present. Over the long period of use of this therapy, there have been enough examples of a decrease in the effectiveness of these drugs, the emergence of resistant strains of pathogens and the need to develop more advanced antimicrobial formulas. These reasons led to the most intensive production of new varieties of these drugs in the period up to the 70s of the last century, which is figuratively called the golden age of antibiotics (16).

Fourthly, at the beginning of the antibiotic era, the discoverer of penicillin, A. Fleming, warned about the danger of developing resistant strains of bacteria (17), and the authors of the industrial version of this drug provided evidence of the rapid appearance of self-defense in bacteria from the aggression of antibiotics (18). As the previous link shows, these processes in the microflora around us had an intensive development long before the events of recent years, but throughout the entire period of antibiotic use, all efforts were directed at maintaining the active action of these drugs, without attaching significant importance to the growing resistance of microorganisms and constant changes in the etiology of nonspecific forms of inflammation. In the latter connection, a very significant event was the announcement by the World Health Organization (WHO) about microbial resistance as a global catastrophe not in the 70s of the last century, when this phenomenon was already obvious, but much later, just during the development of the SARS-CoV-2 pandemic (19). The timeliness of such a statement, in my opinion, was a necessary measure, since this step allowed, at least, to explain the situation in which practical medicine found itself in providing care to patients with coronavirus pneumonia.

Fifth, at present, the main goal of ongoing research and clinical trials remains the pathogen of AP, despite the obvious facts that are repeated at all levels, but remain properly underestimated. On the one hand, the statistics of the pandemic have clearly shown that the spread of the coronavirus means its rapid coverage of population groups that have not previously been in contact with it. However, the high probability of such contact of the body with the coronavirus does not mean the same high probability of the disease, especially in severe form. The infection rate of the population during the pandemic was many times higher than the incidence rate. Many infected people had no signs of this and learned about the presence of coronavirus only on the basis of special tests. Only a fifth of those infected needed hospitalization, and only 5% of the total needed referral to intensive care units (20-22).

However, despite the rather moderate statistical indicators, the real atmosphere of uncertainty and even fear that was observed during the pandemic was explained by the lack of any guarantees to avoid the disease, knowing in advance about the lack of specific and effective treatment. The widespread dissemination of such information on social networks undoubtedly played a role in whipping up negative sentiments, but in this case, we are talking about the influence of special circumstances that influenced professional assessments of the situation, which were mentioned above. The sudden increase in the number of patients with viral inflammation of the lung tissue and their isolated concentration in specialized departments have created completely unprecedented conditions for the staff working there, extreme in terms of physical and moral stress. The author of these lines found himself in similar working conditions in the early period of his career, when the most severe patients with AP began to concentrate in one of the departments of the clinic in order to provide intensive care at the proper level. In this regard, it can be noted that such situations not only create an excessive burden on staff, but also, by concentrating information, allow us to see the problem from a different angle (23). Now, during the pandemic, in addition to the atypical concentration of patients of the same profile, most specialists have not been able to professionally assess and accept the sudden loss of hope for routine antibiotic use.

In connection with the latter, it is only necessary to add one very significant characteristic, which many specialists, focusing on a new contingent of patients, are unlikely to check and, moreover, explain. Nevertheless, if we look at the mortality rates in intensive care units among patients with so-called community-acquired pneumonia on the eve of the pandemic compared with this

indicator for COVID-19 pneumonia during treatment in these departments, we do not see large differences (24-32). At the same time, according to modern standards and concepts, in the first case, patients received etiotropic therapy, while patients with coronavirus were deprived of it. These statistics show us that etiotropic drugs, which today continue to be considered as an expected means of saving lives, do not have a decisive impact on the results of treatment.

On the other hand, attempts at differential diagnosis of AP by the type of pathogen have been going on for many years and have not stopped until now, despite the completely unambiguous results of such studies. Earlier attempts were made to find fundamental differences in lung tissue inflammation depending on the type of bacterial pathogens, but over time such efforts began to be recognized as futile (9,10). During the pandemic, when, among the many modern variants of AP, another form of COVID-19 pneumonia appeared, which in clinical observations repeated the manifestations of previously known bacterial inflammation, new efforts were made to separate bacterial and viral forms of inflammation, which was dictated by hypnotically acquired attitudes of hope for targeted etiotropic treatment. The new efforts also did not bring positive results (13,33,34). However, despite the negative result of such studies, they, in my opinion, are a convincing factor reminding us of the need to remember that we are talking about a non-specific inflammatory process in which not the nature of the alleged pathogen, but organ dysfunction has always played a decisive role in its clinical manifestation. In this case, we return to the fifth classic sign of inflammation - loss of function, which was described at the beginning of our era by Galen and has passed convincing clinical trials and confirmation based on centuries of experience.

Even some of the inconsistencies listed above between modern professional ideas about the essence of AP and the real features of the development of this disease allow us to note deep misconceptions in the interpretation of the essence of this problem. The significant changes observed in the etiology of AP over the past decades could not have started spontaneously, but "strangely" coincided with the period of antibiotic use and were accompanied by other side effects of this therapy. At the same time, the stability of the learned guiding dogmas that define the modern principles of treatment for this category of patients cannot but amaze. What other evidence is required for such a conclusion, when during the SARS-CoV-2 pandemic, the use of antibiotics against coronavirus instantly lost its meaning, but continued to be widely and arbitrarily used, many times exceeding even the permissible indications for their use in viral pneumonia (11-15)? The grotesque nature of such assistance to the sharply increased number of patients with viral lung tissue damage was emphasized by the long overdue recognition of the development of resistant microflora as a worldwide catastrophe with the negative role of antibiotics in this phenomenon during the pandemic (19).

However, a strategic mistake in the modern concept of AP remains the persistent concentration of attention on the etiology of the process, in which the pathogen is assigned the role of the main cause of the disease. Modern medicine, without attaching special importance to the constancy of the AP clinic against the background of frequent changes in the leading pathogens, continues to hope for early diagnosis of etiology and the search for effective etiotropic agents. At the same time, early functional disorders in patients with AP are still trivially explained by impaired gas exchange at the level of ventilation and alveolar diffusion, concentrating all available means of care and support on these causes. The active discussion that unfolded on the margins of professional periodicals during the pandemic caused confusion due to the narrow concentration of their attention only at certain stages of gas exchange. The struggle to increase the percentage of oxygenation using various techniques and devices extended only to methods of oxygen supply

and lung ventilation. The specifics of such a discussion simply force us to pay attention to the entire line of the respiratory cycle.

As you know, the main meaning of breathing is the delivery of oxygen and the removal of carbon dioxide at the level of tissues and cells of the body, which is simply unthinkable without such a stage of the respiratory cycle as blood circulation. At the same time, the irreplaceable role of pulmonary vessels in the general circulatory system and their functional antagonism with vessels of the large circle are known, the vital proportions between which are automatically maintained by the autonomous system of regulation of the small circle (35,36). In addition to this information, which belongs to the category of basic knowledge in teaching clinical disciplines, it is known that the cause of inflammatory tissue transformation is vascular damage. Knowing about these prerequisites, there should be no doubt that the chain of shifts in the general blood flow system in AP, which, unlike other localizations of inflammation, begins with damage to the pulmonary vessels, will have a different mechanism of development, right? But then where is the discussion of these issues when solving the AP problem? Today, in this section of medicine, everything is exactly the opposite. Despite the known differences between the two circulatory circles, the modern diagnosis of circulatory disorders and their correction in patients with AP are based on the same principles as in other localizations of inflammatory processes (37-39). Can such help bring success and satisfaction?

Along with negative assessments of medical care during the total invasion of coronavirus, some experts, on the contrary, note the great successes of health systems during the pandemic, arguing their opinion with positive results of antiviral vaccination (40). Without going into a discussion of the reasons for the need for frequent repetition of such injections and changes in the composition of vaccines, such a selective assessment of the prevention of coronavirus diseases does not even contain hints of an important and relevant comment on the results of treatment of hospitalized patients. After all, it was in this segment of work that medicine suffered the greatest fiasco, and medical care for this complex contingent, which was limited by the level of support and symptomatic means, requires the most detailed and critical analysis, does it not? Moreover, in fact, according to modern recommendations, we are talking about a viral variant of the so-called community-acquired pneumonia, which, when trying to make a differential diagnosis with bacterial forms of inflammation, turned out to be indistinguishable in etiology (33,34), which again reflected the lack of influence on the dependence of the specificity of the process on the type of pathogen.

Specialists who take responsibility for assessing the quality of medical care for coronavirus infection cannot but know that in the case of inflammation of the lung tissue, modern medicine continued to pin hopes on the widespread use of antibiotics and oxygen insufflation (11-15). Of course, when there are no options for critical assessment and suggestions for a way out of the current situation, it is easiest to silently ignore this information. However, the analytical value of the mentioned expert assessment acquires a completely different character and makes it possible to understand the stencil approach even to conclusions about non-standard situations if you read an editorial in the same journal that appeared quite recently, at the peak of recent events. According to the positions presented, the authors of the last interview (40) were among the co-authors of the statement published by the editorial board that the cause of the negative results of an unexpected disaster should be sought in the incompetent political leadership of the state (41). Such statements, when the causes of one's own mistakes are sought on the side and even the thought of possible professional misconceptions in this section of medicine, despite

counterarguments, is unacceptable, indicate that existing approaches to solving the problem of AP have reached their bottom.

It is also worth noting the messages expressing pride and confidence in the professionalism of medical workers during the pandemic, which is reflected in the descriptions of the voluntary increase in the volume and duration of work performed during this unexpected ordeal, without additional compensation claims (42). However, in this case we are talking about dedication and dedication to the chosen profession, when the author and her staff felt the need to increase the volume of their work due to the sharply increased workload. But, unfortunately, such an increase in the volume of medical work does not change its direction and principles, which does not affect the final results in any way. There is no doubt that such enthusiasm gripped many members of the medical profession during the pandemic, but it did not lead to radical changes in its outcome.

A selective brief analysis of individual segments of the ANSIL problem in this context is used to draw attention to long-standing misconceptions in this field of medicine. The deformation of views on the essence of the problem under discussion has been formed for many years under the influence of unjustifiably overestimated possibilities of antibiotics, and the current tendency to view the problem through the prism of the leading role of the pathogen continues to determine the current search for solutions. False ideas about the leading role of etiology in non-specific forms of lung tissue inflammation have been refuted in previous years by the results of additional objective studies and clinical trials (23). Today, these materials are confirmed by the constant addition of new facts and evidence, but the conceptual ideas existing in modern medicine about the essence of the problem demonstrate an example of amazing inertia and immunity to growing contradictions.

Dear colleagues, the solution to the problem under discussion primarily depends on how thoroughly and comprehensively we evaluate all the parameters of the phenomenon under study. The current situation in the section of medical care for patients with AP is a clear example of a specific narrowing and selectivity of views on the essence of the problem with the manifestation of indifference and ignoring even those cardinal manifestations of the disease that are already proven facts. In this regard, before directing efforts to investigate possible indirect causes of the problem, such as, for example, finding ways to intentionally spread coronavirus (43) or the role of global warming in the development of such phenomena (44), it is necessary to critically assess the completeness of our own professional approaches to solving this problem. Bringing the system of views on the nature of ANSIL in line with the fundamental foundations of medical science will reveal the true priorities of this problem and decisively change the modern principles of treatment of this category of patients.

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