

The Coronavirus Pandemic in the Light of the Problem of Acute Pneumonia

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For many centuries, acute pneumonia (AP) has been interpreted as a severe inflammatory process, but was not considered as a real threat of infection and disease to others. The ancient postulate that people suffer from pneumonia, and not get infected, determined the principles of working with these patients throughout the foreseeable history of medicine. The situation gradually but radically began to change after the introduction of antibiotics into practice, despite the fact that the epidemiological situation around patients with AP remained the same. The results of the use of antibiotics did not change the basic essence of this nosology, but deprived the etiology of the disease of stable leaders, giving it a labile character, and played an important role in distorting professional ideas about this problem.

The long-term and methodical preparation of many generations of doctors for the leading role of antibiotics in the treatment of AP, quite naturally, focused attention and therapeutic efforts on antimicrobial therapy, assigning the pathogens of the disease a leading role in its development. Such a course of events for many decades has been reflected in the fact that AP, while retaining its former signs known since ancient times, has become classified as an infectious process, and the goal of modern research has turned into an attempt by any means to link and explain the essence of the growing problem with the quality of pathogens. The persistence of many years of efforts to find the key to solving this problem by studying its etiology not only does not give the expected results, but every year leads to further distortion of ideas about its essence, adding new counterarguments against such a strategy.

The experience gained during the period of antibiotic use in this nosology does not allow us to establish a strict etiological dependence of these processes on a specific pathogen, confirming the validity of the former synonym of AP - "acute nonspecific inflammation in the lung". The nonspecific nature of the etiology of AP is emphasized by the periodic change of leaders among its pathogens, which has become not only one of the characteristic features of the era of antibiotics, but also reflected in the significant growth of viral forms of the disease in recent decades.

For a long time, medical science has denied the presence of concomitant microflora in the distal parts of the respiratory tract. This point of view, combined with the growing confidence in the leading role of the pathogen in this process, gave reason to interpret the development of AP as a banal infection of these parts of the respiratory system. Although, usually we are talking about symbionts, and the mechanism of transmission of the disease from patients to healthy remains only an assumption, and not a proven fact, this option of starting an AP is still the most acceptable in professional circles [1-3].

In recent years, the presence of its own microbiota in the lungs has been established, the composition and proportions of which regulate the immune state of the organ, but at the same time are influenced by many factors, including symbionts of other body systems [4-13]. New information about the presence and transformation of the pulmonary microflora allows us to look at the inflammatory processes in

the tissues of the organ from a completely different point of view and better understand the underlying causes of these diseases. This area of research is relatively new, but very promising, however, the data obtained refute the myth that AP is an infectious disease, especially since the pulmonary microflora in a normal state is capable of containing potential pathogens of these processes [14-16].

New scientific information radically changes the set of basic prerequisites when studying one of the problematic situations. At the same time, adherence to the views on the problem of AP, which dominate today in the professional environment, indicates that changing previous ideas about this disease is the most serious obstacle to its solution. Professional views and principles of approach to solving the problem under discussion leave no doubt that the didactic consequences of a long period of AP treatment according to the formula "antibiotics alone" or the habit of using one drug as the main means of treating completely different diseases have left a deep mark. The therapeutic principles that have developed under the influence of the initial effects of the use of antibiotics demonstrate their inflexibility and resistance, despite a sharp change in conditions and numerous counterarguments [17].

The gradual decrease in the effectiveness of antibiotics and the increase in the number of antibiotic-resistant forms of bacteria that are most directly related to the topic of treating patients with AP are assessed by modern medicine as one of its global problems [18]. In this regard, it is rather strange to observe a situation when, having actually laid the foundation and created this problem, the professional community does not attach the same strategic importance to the second side of this problem, which is growing in parallel. In recent decades, experts have expressed concern about the growth of viral forms of AP but have not changed the doctrine of this disease and the basic principles of its treatment.

The increase in the proportion of viruses in the etiology of AP in recent years has been accompanied by at least two major outbreaks of coronavirus infection, SARS and MERS, which have been classified as epidemics, although in addition to the main regions of distribution, their manifestations have been recorded worldwide [19-22]. After these events, the coronavirus firmly established itself in the list of leading pathogens of AP, continuing to constantly participate in the appearance of such patients until the beginning of the pandemic [23-25]. Unfortunately, medicine has not drawn the necessary conclusions from these obvious facts, which, moreover, were not actually advertised and discussed during the pandemic. Therefore, it is not surprising that with the onset of the SARS-CoV-2 pandemic, specialists had no other recommendations other than a call to continue using antibiotics, which patients with COVID-19 pneumonia continued to receive unreasonably widely [26-33]. In this situation, it should be surprising that the lack of indications for antimicrobial therapy in the overwhelming number of patients during the pandemic and the danger of further deepening of its side effects suddenly instantly lost their significance. The latter trend, from my point of view, is a reflection of the depth of didactic distortions of the professional worldview that have occurred over a long period of illusory hopes to solve the problem of AP with the help of antibiotics.

The anxiety, sometimes turning into fear, that gripped the world's population during the SARS-CoV-2 pandemic was caused by the extremely rapid spread of the coronavirus and the danger of developing severe inflammation of the lung tissue. The human body encountered a new variant of the already known pathogen of AP, but it could not demonstrate its adaptation to this aggression as convincingly as when in contact with many other respiratory agents. Nevertheless, the statistics of this event showed that infection does not mean the inevitable development of the disease. Up to 20 - 40% of those infected had no clinical signs of coronavirus penetration into the body at all and learned about it only through testing [34-36] and according to some statistics, the latent carrier of this pathogen during the pandemic reached 78.3% [37]. Such a high percentage of latent contacts does not go well with the concept of a dangerous infection, does it? At the same time, the real reason for widespread emotional stress was complete uncertainty, even among specialists [38-41], that in the event of the development of the disease, its adverse consequences can be avoided, since even young age and the absence of previous health problems, as it turned out, do not guarantee a successful result. All this was supplemented and illustrated by the lack of specific measures of assistance and the low effectiveness of treatment methods offered and used by modern medicine.

The SARS-CoV-2 pandemic, the termination of which has already been announced by WHO experts, has become a very good school for modern medicine. However, materials with current assessments of this grandiose event show that many of the lessons taught by the pandemic have remained misunderstood and undisclosed. Perhaps the only feature of the spread of the coronavirus, which was discussed above, simply could not be overlooked and therefore received its analytical assessment. In previous years, the differences in the severity of the condition of patients with AP were tried to prove and explain the special virulence of pathogens. Now, in the conditions of the spread of a single pathogen and an infinite number of observations in different parts of the globe, heterogeneity of results was noted both in morbidity and clinical manifestations. The explanation of the obvious diversity of manifestations of one infectious wave involving pathogens with different aggressiveness can no longer be accepted as a possible argument.

Several decades ago, the heterogeneity of the inflammatory response in AP was considered as a result of the individual characteristics of the body to respond to the sudden appearance of a trigger in its structures. However, later, under the impression of the action of antibiotics, this role was attributed to a bacterial factor. For many years, the virulence of the pathogen, despite the lack of clear objective evidence of this postulate, dominated as the main cause of the severity of the disease. In the conditions of monoetiological coronavirus infection during a pandemic, the obvious differences in the inflammatory response could no longer be explained by the distinctive features of the pathogen. The obtained conditions clearly indicated that the cause of the heterogeneity of inflammatory processes is an individual feature of the reaction of the patients' body, which again began to be considered as an important factor [42-45]. At an international conference held in May 2023 under the auspices of the American Thoracic Society, the heterogeneity of the host's immune response to contact with a homogeneous pathogen was recognized as an undoubted fact [46,47]. Despite the recognition of personal variants of the dynamics of the inflammatory reaction, in the mechanisms of this process, the pathogen continues to be considered as the main driving force, and with the same persistence and consistency as before. Unfortunately, it is not yet possible to note the impact of the pandemic on the revision of other fragments of the system of views on the development of acute inflammation of the lung tissue.

Nevertheless, the recognition of differences in the body's response to contact with an equivalent pathogen does not prevent the parallel expression of confidence that the fight against various viral infections cannot be carried out in the same way, which requires ensuring its specificity [45,46]. This conclusion means that the characteristics of the pathogen are still one of the most important signs on the basis of which the treatment strategy for patients with AP is based. In real conditions, this principle of the approach to solving the problem is expressed in the concentration of attention on the properties of the causative agent of lung inflammation, which is currently the leader in their etiology. As for the current situation, the coronavirus turned out to be such a target today. At the same time, no one wants to critically assess the reasons why the objects of such attention and the direction of efforts have changed with a certain frequency in recent decades, but the problem of AP remains unresolved, and the real results of efforts are becoming less and less encouraging.

If you look back and look at the foreseeable history of attempts to solve the problem of AP over the past few decades, you can clearly see how medical tactics have changed in this direction in accordance with the emergence of a new dominant pathogen. With the emergence of the next leader among AP pathogens, all complications and treatment failures were attributed to its aggressive qualities, and the main hope for success was placed on the right choice of antimicrobials. The most indicative stage of such an approach to solving the problem under discussion may be an anti-pneumococcal company, which additionally included a long-term broad vaccination of the population. The principle of solving the problem, which is based not just on suppression, but actually on the extermination of individual representatives of the nonspecific microflora accompanying our body, can bring temporary success, but not victory and not confidence that future patients with this disease will be able to receive reliable help.

The selective ability of the coronavirus to infect lung tissue and the instability of the etiology of AP observed in recent decades with the indomitable growth of viral forms of the disease have actually turned this pathogen into a kind of analogue of the "pneumococcus of the 21st century". In the recent past, attempts at differential diagnosis of bacterial forms of AP by the nature of the pathogen, as is known,

have failed [48]. At this stage, attempts to distinguish coronavirus infection from bacterial pneumonia, which may seem an easier task, have also been unsuccessful [49,50]. However, where and by whom are scientifically based explanations of the causes of these failures presented? After all, coronavirus remains an etiological factor of the disease of new patients today, but modern medicine does not have a scientifically based strategy for their treatment, confirmed by the first encouraging results, and not by assumptions about the expected success, does it? The whole set of therapeutic agents and methods for many years has been of the nature of auxiliary and symptomatic care in addition to antibiotics as the main type of therapy. For a long time, the results of the practical implementation of these principles have shown a steady decline in their effectiveness, and today, when antimicrobials have lost their former significance, the existing theoretical distortions and misconceptions in this problem have become especially noticeable.

During the years of the pandemic, the world's population was able to gradually acquire general immunity against the coronavirus, which, unfortunately, does not have stable reliability. Great support in this process was provided by vaccination, the effectiveness of which many experts tend to exaggerate. However, the most laudatory estimates of vaccination against coronavirus are opposed by such facts as the need for multiple vaccinations with relatively short intervals, as well as the lack of a full guarantee to avoid the disease even after receiving the recommended set of injections. In this regard, the opinion of some leading experts is surprising and perplexing, who, summing up the results of the last pandemic, consider vaccination to be the greatest achievement of modern medicine in eliminating this phenomenon, but at the same time do not mention the most vulnerable area in which, to put it mildly, medicine was not at the proper level - the treatment of patients [51]. Vaccinations are known to be a preventive measure that cannot fully protect against the disease, and during the pandemic this was noted among vaccinated people. And what are the prospects today for those whose body, despite the implementation of all recommendations, could not avoid the inflammatory process?

The emergence of the SARS-CoV-2 pandemic had a significant impact on all aspects of the life of the world community, which required reasoned explanations of the causes of its occurrence. The direction of the search for answers, despite the statistics of morbidity among the infected, was determined by the conceptual ideas that the pathogen is the main and only cause of this disaster. Therefore, the main attention was paid to the suddenness of the pandemic and the aggressiveness of its causative agent. The main topics that were analyzed and discussed during the pandemic concerned the origin of the coronavirus and the ways of its penetration. The probability of natural pathogen transformation mechanisms that could arise after its first epidemics has not been seriously considered and studied. Some experts explain this fact by the lack of freely available data on the genomic sequence of pathogens [52-54]. However, on the other hand, when, for example, there are reports that 82 coronavirus mutations were discovered by a large group of researchers from different countries in just 3,5 months of the pandemic [55], then the option of naturally acquiring more aggressive qualities should not only be mentioned, but also properly investigated, right?

Unfortunately, the predominance of views on the hegemony of etiology in the development of AP has led to the concentration of analytical research on a limited number of theories closer to the generally accepted concept of the disease. In addition, in recent decades, with the advent and spread of the Internet, many segments of the population have received an unprecedented opportunity to participate in the discussion of various problems. The increased availability of mass media and the emergence of social networks have dramatically increased the audience of analytical discussions. Programmed views on the problem, selective choice of proposed versions, incompleteness of basic information, and sometimes lack of professional training on issues discussed by some participants can have a noticeable impact on the outcome of discussions. In such situations, the point of view of professionals can rely on "the wisdom of the crowd" and fall into the zone of "heavily politicized science" [56]. Such factors imperceptibly shift the focus to other spheres of life, and then so-called conspiracy theories appear, or, for example, the purely medical problem of the low effectiveness of the treatment of COVID-19 pneumonia suddenly turns out to be the result of defects in internal state policy [57].

At present, when the severity of the epidemiological situation has decreased, the restrictions imposed earlier in everyday life have been lifted, and the pandemic has been officially recognized as completed, it would seem that conditions have developed for a balanced comprehensive assessment of all parties and the consequences of the past “hurricane”. However, as the materials of current publications on this topic show, the main obstacle that does not allow us to look at the natural evolution of the microflora surrounding us with the active participation of medicine itself remains insurmountable. The bias already mentioned above is clearly evident in such publications, which makes it difficult to consider other obvious fragments of the problem under discussion.

The conclusion on the causes of the pandemic, which was published in an authoritative medical journal recently after the announcement of the abolition of mandatory anti-epidemic measures, was based on an analysis of materials accumulated on the study of this issue during this period [58]. As can be seen from the content of this article, only two possible versions attract the attention of experts - infection with seafood at the market in Wuhan, China, and leakage of coronavirus strains from a laboratory in the same city. The authors concluded that there is no convincing evidence in favor of these two main assumptions, despite the fact that the probable laboratory source of infection and even suspicions of the premeditation of these actions served as a reason to involve the special services in the study. In this regard, the question of the origin of the pandemic remains unanswered, but at the same time, factors such as the likely link between the pandemic and previous epidemics, the obvious increase in the number of viral diseases in recent decades, the quite possible role of long-term antimicrobial therapy in the genesis of these phenomena are not even mentioned in the order of scientific discussion.

Attention should also be drawn to the fact that during the SARS and MERS epidemics, accompanied by a severe course of diseases, which today are compared with the severity of COVID-19 pneumonia, there were no suspicions about the artificial origin of outbreaks of infection and no such scrupulous investigation was carried out as in the latter case. This confirms the validity of the concern of some specialists about the growing medical misinformation via the Internet, since it is known that the lack of new ideas in the search for answers to vital topics often leads to the emergence of mystical theories [56]. And since the reliability of the connection between these monoetiological events is not even mentioned among the likely sources of the pandemic, we can only hope for the results of future comparisons of genomic transformations of the coronavirus that could have occurred naturally over the past period. However, it seems completely unrealistic to get information about the second side of this conflict and to assess the dynamics of changes in the immunological characteristics of the world’s population. Of course, such changes could not but occur in biological systems for almost two decades, and they undoubtedly had to play an important role in this event.

At first glance, it may seem inappropriate if we compare the SARS-CoV-2 pandemic with a kind of exam that nature has conducted for modern medicine regarding its competence and readiness to treat acute nonspecific inflammatory processes of the lungs. However, the validity of such a comparison logically follows from those materials and facts of the surrounding reality that are well known today.

So, the coronavirus, the pandemic of which has stirred up the world community in recent years, is characterized by a selective tendency to affect lung tissue. Despite the rapid pace of its spread, the relatively low damaging activity of this pathogen in comparison with some particularly dangerous infections does not allow this phenomenon to be attributed to their category, and the additional heterogeneity of the inflammatory reaction in conditions of the same etiology and the selective nature of the development of pneumonia reflect individual morbidity, not the spread of the virus. At the same time, the statistics of the etiology of AP for the period after the first epidemic of SARS show that the coronavirus has settled among the permanent pathogens of this polyetiological disease, and its ability to quickly change its own genotypes is more characteristic of symbionts forced to adapt to other representatives of the microbiota and biological rhythms of a living organism.

Secondly, the absence of clear differential criteria between COVID-19 pneumonia not only with other viral infections, but also with bacterial forms of lesion once again convincingly shows that the severity and manifestation of the disease do not depend on the type of pathogen but require close attention to the same pattern of the pathogenesis of this nosology.

Thirdly, the constant changes in the list of AP pathogens that have appeared and persist throughout the entire period of antibiotic use, as well as the steady increase in the number of lung inflammations of viral etiology suggest the influence of antimicrobial drugs on the growth of respiratory viral epidemics in recent years, including the development of prerequisites for the emergence of the SARS-CoV-2 pandemic. The use of agents that affect the microflora around us can also be the cause of the appearance of previously unknown infectious diseases and the return of long-gone infections, which has recently attracted the attention of epidemiologists [59,60].

Fourth, the inappropriate and widespread use of antibiotics during a pandemic in patients with coronavirus pneumonia and the continued high popularity of these drugs, despite a sharp change in conditions, is a clear confirmation of their negative didactic influence on the formation of professional ideas about the nature of AP with an excessively high role assigned to the causative agent of the process. It is professional ideas about the priority of the factors underlying this problem that determine the direction of current research and formulate the principles of therapeutic efforts in achieving the final results.

Fifthly, the clinic of all currently known localizations of inflammation differs depending on the classical sign of dysfunction of a particular affected organ, and the severity of clinical manifestations and the depth of emerging shifts depend on the individual nature of the body's response to primary damage to its structures, regardless of the type of pathogen. In this regard, the pathogenesis of the disease at the level of its integrative mechanisms should acquire priority in the study of this problem.

Sixth, as a result of the exaggerated role of the pathogen in the development of nonspecific inflammatory processes, today the assessment of the condition of patients with AP and the effectiveness of their treatment is increasingly shifting to the cellular-molecular level. Shifts in the studied indicators are considered from the point of view of the aggressiveness of the pathogen, without paying due attention to the inevitability of protective and adaptive reactions of the organism. These distortions in the assessment of emerging disorders can be eliminated by studying the clinical equivalent of the mechanisms of pathogenesis, their causal relationship and the permissible limits of self-elimination.

Finally, modern medicine failed to properly ensure the successful treatment of a large flow of lung patients during the pandemic, and the lessons learned were not learned. The AP problem has now reached the stage of its development when, without a critical, versatile and balanced reassessment of its mental perception, it is impossible to count on further achieving real success in the near and long term.

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Conflict of Interest

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