IMPACT OF COVID-19 ON THE COURSE OF ANKYLOSING SPONDYLITIS

Abdurakhmanova Nargiza Mirza-Bakhtiyarxonovna, Akhmedov Khalmurad Sadullaevich, Rakhimov Sardorbek Samandarovich

Tashkent Medical Academy, Uzbeksitan

According to various studies, it is known that COVID-19 causes many extrapulmonary complications, including cardiovascular, neurological and dermatological, in particular, of the osteoarticular system. The literature describes isolated clinical cases of damage to the osteoarticular system and spine against the background of the development of COVID-19. Undoubtedly, the course of spondylitis against the background of COVID-19, taking into account the pathogenesis of coronavirus infection, has its own characteristics.

Keywords: COVID-19, ankylosing spondylitis, pro-inflammatory cytokine, cytokine storm, basic antirheumatic drugs

COVID -19 is a condition caused by severe acute respiratory syndrome caused by coronavirus 2 (SARS - CoV - 2) [1,2,5]. COVID-19, which gave rise to a pandemic in 2020, covered almost all countries of the world and, according to Johns Hopkins University, the number of cases to date has already exceeded 576 million, and the number of deaths has exceeded 6.6 million people across the planet (www. origincoronavirus.jhu.edu). Coronavirus infection struck the whole world with a high contagiousness of the disease, a variety of mutant strains, a polymorphic clinical picture, as well as damage to various organs and systems [12,25].

The rapid development and large-scale vaccination programs against SARS-CoV-2 give hope for success in the fight against the COVID-19 pandemic [6, 23]. COVID -19 infection, having a global impact not only on such target organs as the lungs, brain and heart [1, 7, 15], but also has an effect on the musculoskeletal system of the body. The COVID-19 pandemic is particularly challenging for patients with rheumatic diseases due to the immune mediation of the disease, and

the treatment they take may adversely affect the susceptibility or severity of viral infection [14,22].

It is well known that COVID -19 is not only has a severe effect on the condition of patients, causing the development of lung damage and, in some cases, the development of post- covid syndrome [3, 5], but also affects the course of those somatic diseases that were observed in patients in the premorbid period [4,7,14]. The impact of COVID -19 on the musculoskeletal system with the development of post- covid articular syndrome is also indicated in the works of Gasparotto et al . Scientists noted that even in patients who did not suffer from joint diseases before covid-19 , arthralgia and oligoarthritis developed in the post- covid period [9, 24]. At the same time, patients who previously suffered from AS for many years turned out to be in a more vulnerable state in relation to patients who did not undergo COVID -19. At the same time, some authors note that in patients who previously suffered from AS, there is an increase in pain in the post- COVID period, a feeling of morning stiffness in the joints, and restriction of movement in them [5,15, 22].

In the midst of the COVID -19 outbreak, researchers from around the world began to study the pathogenetic mechanisms of the SARS - CoV 2 respiratory infection, a growing interest is also focused on the immune -mediated consequences that can be caused secondarily by the virus [6, 14]. In the development of COVID -19-associated visceral injury, central importance is attached to the uncontrolled hyperproduction of cytokines, called " cytokine storm"[10,14]. The essence of this reaction of the immune system consists of an uncontrolled and non -protective hyperproduction of a wide range of pro-inflammatory cytokines: interleukins (IL) 1, 6, 7, 8, 17, TNF α , etc., as well as chemokines (CCL 1, 3, 5, etc. .), which develops in response to a viral infection [2,17]. This leads to systemic activation of inflammatory response cells (macrophages, neutrophils, lymphocytes) [13,15,20]. Cytokine network, plays an immunopathological role both in Covid-19 and in A C, having a similar pathogenesis of the development of an autoimmune process. In this condition, the pro- inflammatory cytokine IL-6 is important . It is secreted by many cell types,

with monocytes, fibroblasts, and endothelial cells forming the main source of IL-6, as well as T cells, B cells, osteoblasts, and adipocytes , which produce significant amounts of IL-6 in various pathological conditions [5, 16,19]. It is important to note that overexpression and abnormal activation of IL-6 signaling pathways is an indicator of an aggressive course of the inflammatory response [7,15], and elevated levels of IL-6 are involved in the pathogenesis of a number of autoimmune diseases, including AS. [2,9,16,17]

Since the outbreak of COVID -19 infection, many rheumatological patients have become concerned about the immunosuppressive properties of DMARDs they are taking. A survey of Indian rheumatologists revealed that during the onset of the pandemic, 47.5% of doctors refused to prescribe DMARDs due to fear of an increased risk of viral, bacterial, granulomatous and opportunistic infections [2, 11, 17].

To date, there are not a large number of works devoted to coronavirus infection in rheumatological patients in the world. American scientists conducted a study on 9766 patients with axial spondylitis, of which 924 had AS. Complications of COVID -19 in patients with AS were compared with patients who did not have rheumatological diseases. A lower rate of severe complications, including death from COVID -19, was found, with the exception of thromboembolic complications. Also, a more severe course of COVID -19 was observed in black men compared to whites. Taking TNF-α inhibitors did not affect the course and complications of COVID-19, secukinumab received a very small number of patients, because of this it was impossible to analyze it. Scientists have not been able to explain the reason for the fewer complications of coronavirus infection in patients with AS [21].

In contrast to this study, another study described a case of COVID -19 in one patient with AS receiving secukinumab [3], the patient was hospitalized and the disease was mild. Researchers have suggested that blocking IL-17 may prevent the “cytokine storm” in COVID -19 [18]. There are other studies related to the use

of secukinumab in autoimmune diseases, with the exception of isolated cases, the use of drugs did not contribute to the severe course of COVID -19 [1,4].

Unfortunately, in relation to another group of genetically engineered drugs, in particular TNF-α blockers, scientists have concerns about COVID -19 [7]. According to the pharmacovigilance of the World Health Organization (WHO), data of 398 patients with rheumatic diseases who fell ill with COVID -19 were analyzed . The analysis showed that 84.5% of them received TNF-α inhibitors, i.e. the chances of getting sick on the background of this group of drugs is higher compared to patients receiving interleukin-6 inhibitors or jacus kinase inhibitors [4,9].

Scientists from Greece analyzed 443 patients with autoimmune rheumatic diseases, all patients received basic antirheumatic and / or genetically engineered drugs, of which only 32 patients were infected with COVID -19, and only three of them had pneumonia, which quickly responded to treatment [8] .

Doctors from the Global Rheumatology Alliance reported online correspondence with 2992 patients living in the US diagnosed with spondyloarthritis between the start of the lockdown and March 2021. Of these patients, 212 were confirmed to have COVID -19, and patients receiving sulfasalazine have an increased risk of infection and no severe course of coronavirus infection [10].

Scientists from Italy came to the conclusion that patients with rheumatological diseases should not cancel basic antirheumatic drugs, with strict adherence to the norms for the prevention of COVID -19 infections [13].

Despite the fact that more than two years have passed since the beginning of the pandemic in the world, there are only certain data, they mainly reflect short-term observations that do not reflect the long-term results of studies of the effects of COVID -19 on the activity, clinical course, and prognosis of ankylosing spondylitis. A complex of therapeutic and preventive measures for patients with AS has not been developed, taking into account the transferred COVID -19.

Reference:

1. Мирза-Бахтиярхоновна, АБДУРАХМАНОВА Наргиза. "Quality of life in patients with ankylosing spondyloarthritis after COVID-19." Журнал биомедицины и практики 7.2 (2022).
2. Abdurakhmanova NM, Kh.S.Akhmedov , F.S. Razzakova . Influence of post-COVID-19 infection on the level of Interleukin-17 in patients with ankylosing spondylitis. J. Infektsiya , immunitet i farmakologiya . No. 2, 2022
3. Abdurahmanova, N. M. B. (2022). Methods of secondary prevention in patients with ankylosing spondyloarthritis under COVID-19.
4. Abdurakhmanova, N. M., & Ahmedov, K. S. (2022). Influence of accepting basic antirheumatic therapy for ankylosing spondyloarthritis on the clinical course Covid-19. ACADEMICIA: An International Multidisciplinary Research Journal, 12(7), 71-76.
5. Akhmedov, K. S., Rixsiyeva, L. M., et al. (2023). Changes in c-telopeptide collagen-ii level in patients with ankylosing spondyloarthritis after COVID-19. Journal of Modern Educational Achievements, 3(3), 78-87.
6. Askanase AD, Khalili L, Buyon JP. Thoughts on COVID-19 and autoimmune diseases. Lupus sci Med . 2020; 7:e 000396. doi : 10.1136/lupus-2020-000396.
7. Benlidayi IL, Kurtaran B. , Tirasci E., et al. Coronavirus disease 2019 (COVID-19) in a patient with ankylosing spondylitis treated with secukinumab : a case-based review. Rheumatol Int. 2020 Oct;40(10):1707-1716.
8. Buranova, S. et al. (2023). Features of the clinical course of rheumatoid spice against the background of the influence of xenobiotics. American Journal of Interdisciplinary Research and Development, 12, 142-147.
9. Ceribelli A et al. Recommendations for coronavirus infection in rheumatic diseases treated with biologic therapy. J Autoimmun . 2020;109:102442 .
10. Chandrashekara S. et al. Post COVID Inflammation Syndrome: Different Manifestations Caused by the Virus. J Assoc Physicians India. 2020 Dec;68(12):33-34.
11. Claudio Ronco , Paolo Navalesi , Jean Louis Vincent. Coronavirus epidemic: preparing for extracorporeal organ support in intensive care // The Lancet. — Elsevier, 2020. — 6 February.
12. Duret PM, Sebbag E, Mallick A, Gravier S, Spielmann L, Messer L (2020) Recovery from COVID-19 in a patient with spondyloarthritis treated with TNF-alpha inhibitor etanercept. Ann Rheum Dis . pii : annrheumdis-2020-217362
13. Favalli EG, Ingegnoli F, De Lucia O, Cincinelli G, Cimaz R, Caporali R. COVID-19 infection and rheumatoid arthritis: far away, so close! Autoimmune Rev. _ 2020;19:102523 . doi : 10.1016/j.autrev.2020.102523.
14. Gasparotto M, Framba V, Piovella C, Doria A, Iaccarino L. Post-COVID-19 arthritis: a case report and literature review. Clin Rheumatol . 2021 Feb 15:1–6.

15. Gianfrancesco MA et al. COVID-19 Global Rheumatology Alliance Steering Committee Rheumatic disease and COVID-19: initial data from the COVID-19 Global Rheumatology Alliance provider registries. Lancet Rheumatol . 2020; 2:e 250–e253.
16. Gupta L, et al. Management of rheumatic diseases in the time of covid-19 pandemic: perspectives of rheumatology practitioners from India. Ann Rheum Dis . 2020 doi : 10.1136/annrheumdis-2020-217509.
17. Malahat Khalili et al. Epidemiological characteristics of COVID-19: a systematic review and meta- analysis. // Epidemiology & Infection. — 2020/ed. — Vol. 148.
18. Mikuls TR, Johnson SR, Fraenkel L et al. American College of Rheumatology guidance for the management of adult patients with rheumatic disease during the COVID-19 pandemic. Arthritis Rheumatol . 2020 doi : 10.1002/art.41301.
19. Mirza-Bakhtiyarkhonovna A. N. Features of the state of the cellular and humoral components of immune system in patients with ankylosing spondyloarthritis after COVID-19 //European Journal of Molecular & Clinical Medicine. – Т. 9. – №. 08. – С. 2022.
20. Rakhimova MB, Kh.S . Akhmedov The impact of sequelae of COVID-19 on the course of ankylosing spondylitis. Central Asia journal of medicine . Vol . 2021. Issue 4., p.11
21. Rosenbaum JT, Weisman MH, Shafer C. et al. Correspondence on 'Factors associated with COVID-19-related death in people with rheumatic diseases: results from the COVID-19 Global Rheumatology Alliance physician-reported registry'. // Ann Rheum Dis. 2021 May 13: annrheumdis-2021-220588.
22. Treharne GJ, Johnstone G et al. Fears about COVID-19 and perceived risk among people with rheumatoid arthritis or ankylosing spondylitis following the initial lockdown in Aotearoa New Zealand. Musculoskeletal Care. 2022 Jun;20(2):290-298. doi : 10.1002/msc.1585. Epub 2021 Aug 13. PMID: 34388290; PMCID: PMC8441895.
23. Ye C, Zhong J et al. COVID-19 infection in patients with connective tissue disease: A multicity study in Hubei province, China. // MedComm 2021 Mar;2(1):82-90. doi : 10.1002/mco2.56. Epub 2021 Feb 4. PMID: 33821253; PMCID: PMC8013216.
24. Wu X, Xia T, Shin WJ, et al. Viral Mimicry of Interleukin-17A by SARS-CoV-2 ORF8. mBio. 2022;13(2):e 0040222. doi:10.1128/mbio.00402-22
25. Zaripov S.S. et al. (2023). THE EFFECT OF CLIMATE-GEOGRAPHICAL FACTORS ON RHEUMATOID ARTHRITIS ACTIVITY. World Bulletin of Public Health, 18, 67-69. Retrieved from