RHEUMATOLOGY OF KAZAKHSTAN
Scientific and practical specialized journal

ҚАЗАҚСТАН РЕВМАТОЛОГИЯСЫ

Ғылыми-практикалық мамандандырылған журнал

№2(6) | 2022

QCR

Республиканское общественное объединение
КАЗАХСКАЯ КОЛЛЕГИЯ РЕВМАТОЛОГИИ

ҚАЗАҚСТАН
РЕВМАТОЛОГИЯСЫ

Ғылыми-практикалық мамандандырылған журнал

Научно-практический специализированный журнал «Ревматология Казахстана»
"Rheumatology of Kazakhstan" Scientific and practical specialized journal

Иесі мен құрылтайшысы: «Қазақ ревматология алқасы» республикалық қоғамдық бірлестігі
Собственник и учредитель: Республиканское общественное объединение «Казахская коллегия ревматологии»
Owner and founder: Republican Public Association "Qazaq College of Rheumatology"

Журнал ҚР Ақпарат және қоғамдық даму министрлігінде тіркелген
№KZ74VPY00032259, тіркеу куәлігі 11.02.2021 жылы
Журнал зарегистрирован в Министерстве информации и общественного развития РК
№KZ74VPY00032259, свидетельство о регистрации от 11.02.2021 года
Шығу жиілігі: Тоқсан сайын
Периодичность: Ежеквартально
Frequency: Quarterly

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№2(6)|2022

«Print House Gerona» баспаханасында басылған, Алматы қ., Сәтпаев к-сі, 30а/3
Отпечатано в типографии «Print House Gerona», г. Алматы, ул. Сатпаева, 30а/3

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ОБЗОРЫ

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COVID-19

КЛИНИЧЕСКИЙ СЛУЧАЙ

ТЕЗИСЫ

НПА, РЕЗОЛЮЦИИ

УДК:616.722-578.834.11

DOI:10.24353/QR.2022.61.25.017

Ankylosing spondyloarthritis and Covid-19

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Abstract. Coronavirus 2019 (Covid-19) is seriously affected human health and reasoned great resolution to healthcare in the world. Despite the fact that the whole world is contending with Covid-19 and new strains of it continue to emerge. Covid-19 affects not only the respiratory system but also involves the cardiovascular system, the gastrointestinal tract and the musculoskeletal system. The musculoskeletal manifestations appeared like myalgia, arthralgia and viral arthritis. This article will consider Covid-19 and how it affects patients with Ankylosing spondyloarthritis disease.
Key words: ankylosing spondyloarthritis, HLA-B27, Covid-19, C-reaktive protein, BASDAI

For citation:
Kh.T. Mirakhmedova, N.A. Dadabayeva, G.B. Saidrasulova, N.M. Narziyev. Ankylosing spondyloarthritis and Covid-19. Rheumatology of Kazakhstan. 2022;2(6):95-98

Анкилозирующий спондилоартрит и Covid-19

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Аннотация. Коронавирус 2019 (Covid-19) оказал серьезное влияние на здоровье человека и нанес большой ущерб здравоохранению в мире. Несмотря на то, что весь мир борется с Covid-19, продолжают появляться новые его штаммы. Covid-19 поражает не только дыхательную систему, но и сердечно-сосудистую систему, желудочно-кишечный тракт и опорно-двигательный аппарат. Скелетно-мышечные расстройства проявляются также в виде миалгии, артралгии и вирусного артрита. В этой статье будет рассмотрено влияние Covid-19 на пациентов с анкилозирующим спондилоартритом.
Ключевые слова: анкилозируюший спондилоартрит, HLA-B27, Covid-19, С-реактивный протеин, BASDAI.

Introduction

Covid-19 is an infectious disease of the respiratory system. Many patients who experienced Covid-19 debuted the musculoskeletal manifestations such as myalgia, muscle weakness, arthralgia or worsening of existing symptoms of musculoskeletal diseases experienced with Covid-19. Covid-19 primarily affects the respiratory organs and also can involve other organs and systems [1]. Some researchers found that Covid-19 may be the reason for immune dysregulation and complement activation [2]. As a result, the immune complex may deposit within the joints and synovial fluid like other viral infections [3]. As a result, the immune complex may deposit within the joints and synovial fluid like other viral infections. In one case given that a patient who experienced Covid-19 debuted secondary reactive arthritis after one week. The joint fluid had been aspirated from the swelling joint and it had been diagnosed by PCR. The aspirated synovial fluid was a Covid-19 negative and in a Gram stain was negative for gonococcal, and Chlamydia also [4].

Ankylosing spondylitis (AS) is a chronic autoinflammatory disease of joints and entheses. The disease debuts in early adulthood. In general, males suffer a lot more than females. AS mainly affects the sacroiliac joints and spine. Inflammatory back pain is one of the initial symptoms of AS. In many patients' diagnosis of AS is usually delayed more than seven years. AS involve other organs such as eyes, heart, and skin. Disease manifestation may be low back pain and like olygoarthritis or plantar fasciitis.

MRI is used to find early signs of sacroiliitis. Some researchers found that HLA-B27 positive and negative patients did not differ significantly in symptoms of clinical observation. However, HLA-B27 positive patients had detected significantly higher joint destruction scores and activity scores compared with HLA-B27 negative patients in

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Table 1

Characteristics of the study patients	AS patients who experienced Covid-19	AS patients without Covid-19
All participants number n	9	34
Male n	8	27
Female n	1	7
Age years	40,3 (19-52)	41,2 (24-65)
Disease duration (years)	9,6	10,1
HLA-B27 positive (%)	89%	91%
BASDAI	6,05 (4,1-8,0)	4,7 (3,5-6,0)
VAS 10	6,4	4,1
ASDAS-$_{C\text{-}RPO}$	4,65	3,4
ESR (mm/h)	25,3	18,5
COVID-19 PCR was positive%	100%	0

Table 2

Sacroiliac joints x-ray	Bilateral sacroiliitis n-9, %	Acute inflammation of SIJ on MRI n-9	
		Unilateral	Bilateral
1 degree	0	2	7
2 degree	56%	Acute inflammation on spine on MRI n-9	
3 degree	22%	Non appeared	Appeared
4 degree	33%	3	6

MRI. They said that between MRI signs and clinical findings was not any association [5].

This article will consider Covid-19 and how it affects patients with Ankylosing spondylarthritis disease.

Purpose. Evaluate disease activity and radiological change in AS patients who experienced Covid-19.

Materials and methods

The study was conducted at the SKAL, Department of Rheumatology and Cardio Rheumatology of the multicentric Clinic of Tashkent medical academy in 2021-2022.

The study design was prospective cross-sectional. The study participated in 42 patients with axial Spondyloarthritis that confirmed the ASAS criteria. 8 patients were experienced Covid-19. 34 patients were without Covid-19. Patients' age was above 18 years old. Among the participants was eight females and others were male.

Patients' disease activity has been defined by the BASDAI (Bath Ankylosing Spondylitis Disease Activity Score) and a blood sample was taken to detect HLA-B27, C-reactive protein and erythrocyte sedimentation rate. All patients disease activity was calculated with the Ankylosing Spondylitis Disease Activity Score (ASDAS) after defining C-reactive protein and erythrocyte sedimentation rate. Patients' pain severity was assessed with a visual analogue scale (VAS).

Only Covid-19 experienced patients' sacroiliac joints and spine were observed by MR imaging (MAGNETOM Aera 1,5 Tesla by Siemens) and x-ray. On MR imaging was used a coronal and transverse plane with T1, T2 weighted and STIR sequences while the x-ray was used with anteroposterior and lateral projection.

Patients were unable to lie during MRI examination with STIR sequences and patients with claustrophobia and also who have a metallic foreign body or implants were excluded from the study. Moreover, if patients refused agreement, they would not include in the research.

Results. The demographic information of patients is given in table 1. Patients who experienced the Covid-19 were PCR positive in their history, but during the study were not any respiratory symptoms or signs of frosted glass in computed tomography. Patients who experienced Covid-19 had not been taking any immunosuppressive therapy.

VAS index was higher than the control group. Besides BASDAI score was also increased to compare the control. ASDAS-C-RPO score was approximately 1,4 times higher in patients who experienced Covid-19.

AS patients who experienced Covid-19 were found with bilateral sacroiliitis on x-ray. Bilateral II degree of sacroiliitis was defined as 56 per cent, while III and IV degree was appeared 22 and 33% of patients. I degree bilateral sacroiliitis sign was not found any patients (Table 2). Acute inflammation as bone edema was found all patients. In addition to 22% patients were detected unilateral bone edema and 78% of patients were appeared bilateral acute inflammation on sacroiliac joints (Table 2).

Case 1. During the study, one patient was positive in PCR and increased the level of IgG to Covid-19, but any respiratory symptoms did not detect while observation. The patient's age was 19 years old. During the examination, he complained of dull pain in one side of the Achill tendon and low back pain. His complaints have been continuing for 8-9 months. He also had experienced right side knee arthritis and plantar fasciitis. The anamnesis was a pain in the lower part of the

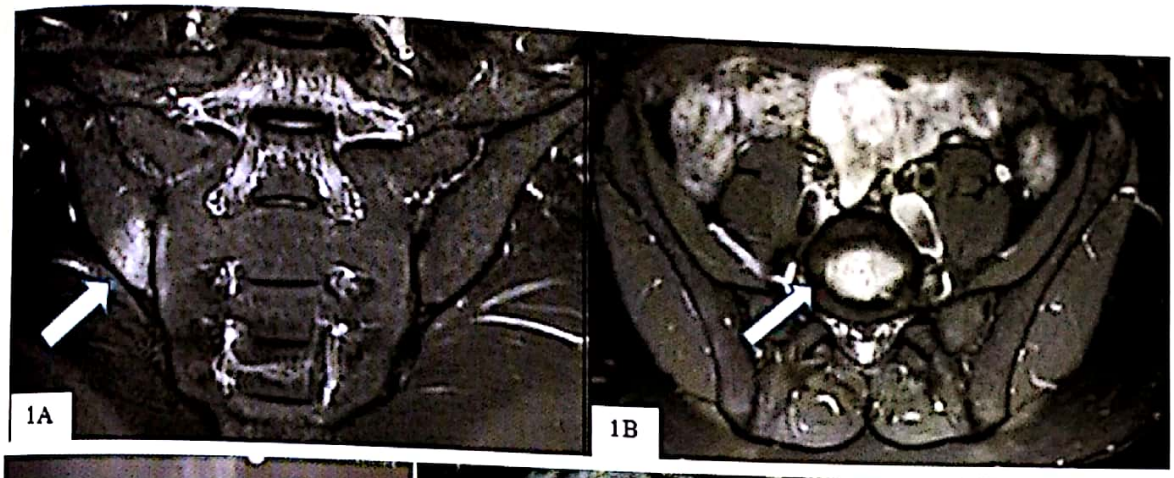

Figure1. Given sacroiliac joints MRI right side acute inflammation (bone edema). 1A with STIR sequence bone oedema is shown with a white arrow. 1B ith STIR sequence, spondylodiscitis is shown with a white arrow

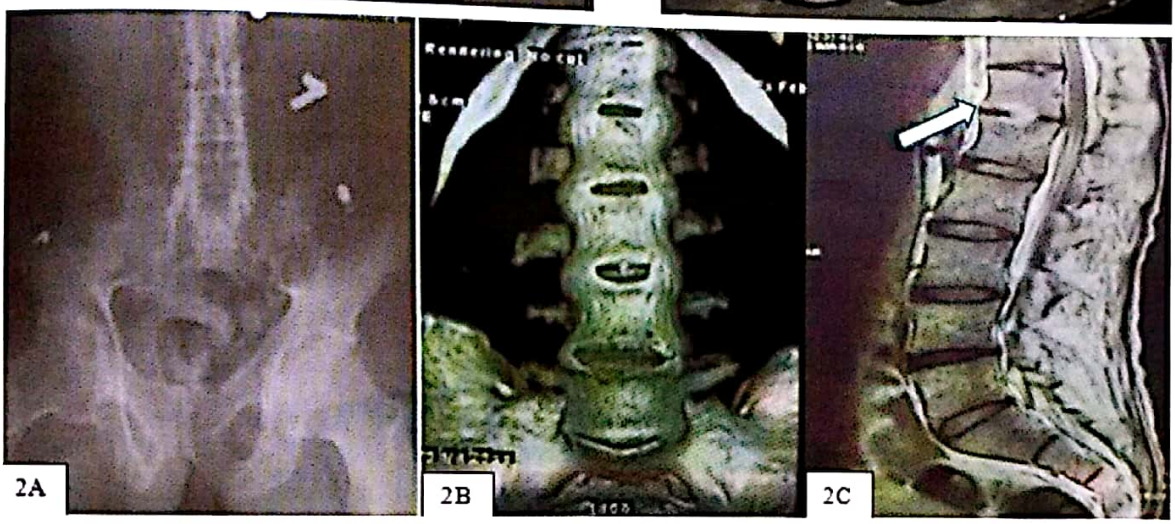

Figure 2. 2A x-ray: bilateral sacroiliitis IV degree. 2B CT ankylosis of spine. 2C MRI acute inflammation

spine, on one heel and one knee 2 years ago and had prolonged approximately more than 3 months. During the last 5 months, he is regularly taking sulfasalazine 2 gr a day and non-inflammatory anti-inflammatory drugs (NSAID) irregularly. In the serum, C-RP and ESR levels were significantly higher at 42 mg/l and 25 mm/h respectively. HLA-B27 was also positive. An MRI found right side of acute inflammation like bone edema (Figure 1).

Case 2. The patient was admitted to the rheumatology department. His age was 46 years old. He complained for all large joints pain and inability to move. An anamnesis was obtained: he had experienced Covid-19 4 months ago, before that he 5 more times was a neurologist consultation with an osteochondrosis diagnosis. He had been taken NSAID irregularly. An examination was defined: limitation of movement in the shoulders, hips, and knee joints. The patient was not able to move the rotation of the neck. Due to pain in the knee joints were found to contracture and the patient was not able to stand on foot. In the serum, C-RP and ESR levels were significantly higher at 42 mg/l and 26 mm/h respectively. Rheumatoid factor was negative. Antibody to IgG of Covid-19 was positive-5,0 [(<0,9-negative) (7.04.2022)]. HLA-B27 was also positive. ASDAS-C-RP levels were 4,9 with very high disease activity. BASDAI-7,5. X-ray: bilateral sacroiliitis of IV degrees (Figure 2).

Case 3. The patient's age was 45 years old. She had been never observed by a rheumatologist. She treated only neurologist with osteochondrosis. Her complaints were begun at 25 years old. An anamnesis found: pain in the lower part of the spine for more than 3 months, night pain. An examination: arrogant posture, pain in knee, hip and sacroiliac joints, frontal and sagittal limitation of movement in lumbar part of spine. In the serum, C-RP and ESR levels were slightly higher at 42 mg/l and 10 mm/h respectively. Rheumatoid factor was negative. Antibody to IgG of Covid-19 was positive-2,24 (<0,9-negative). ASDAS-C-RP levels were 4,4 with very high disease activity. BASDAI-5,1. X-ray: bilateral sacroiliitis of II degrees. An MRI found bilateral sacroiliitis and left side acute inflammation like bone oedema (figure 3).

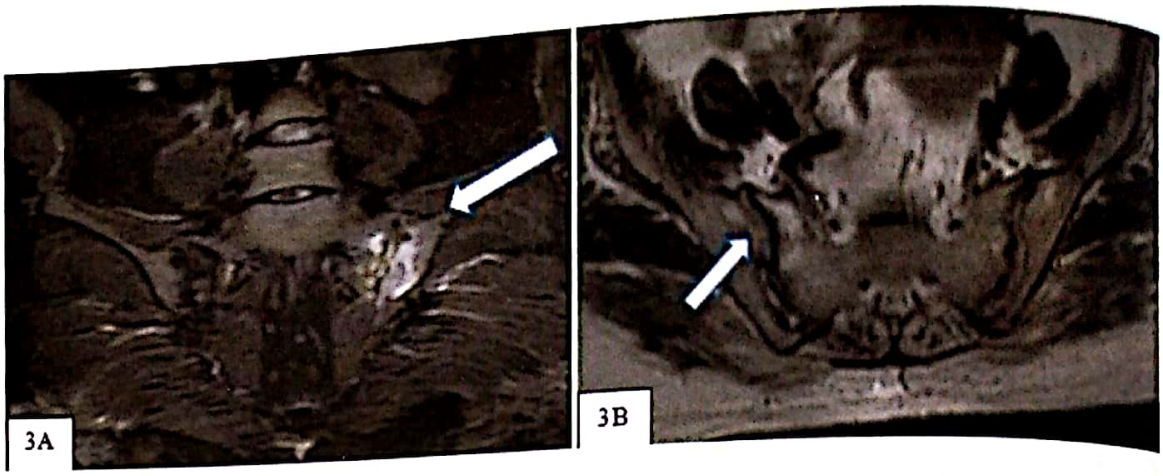

Figure 3. Given sacroiliac joints MRI left side acute inflammation (bone edema). 3A with STIR sequence bone oedema is shown with a white arrow. 3B with T2 weighted fast recovery fast spin echo, fat deposition on the right side with narrowing and widening area

Discussion

Some researchers said that people with rheumatic disease may be at high relative risk for infecting Covid-19 than healthy people. This research work included a small sample size, research result gave a significant confidence interval [6]. Susceptibility to Covid-19 is influenced by host organism, viral infection and environmental factors also. Spain researchers said that during the first wave, people with rheumatic diseases had a 30% higher susceptibility to Covid-19 than other populations [7]. Apart from this, the scientific work conducted in Italy showed that among rheumatic diseases estimated risk of infection for Rheumatoid arthritis (RA) was 64% increased than the general population.

Some research said that patients with RA who received Janus kinase inhibitors or rituximab might be worsening outcomes than RA patients who received inhibitors of TNF-alpha [8].

Our research found that patients who experienced Covid-19 had not been taking any immunosuppressive therapy like disease-modifying antirheumatic drugs (methotrexate, sulfasalazine, leflunomide) or any gene-engineering target therapy such as inhibitor IL-17 and inhibitors of TNF-alpha. One research study showed that some research works are being carried out with treating various inhibitors of TNF-alpha but it works are not completed [9].

Covid-19pathogenesis participates in multiple destructive signaling pathways and they are impacted by the course of the disease. A low level of inflammation aids to a successful elimination of Covid-19 infection but in organism Covid-19 may occur over activated inflammatory pathways and leading to multiorgan damages [10]. Moreover, in this issue identifying inflammatory pathways and therapeutic targets in Covid-19 is of high value.

Many AS patients take immunosuppressive drugs such as inhibitors IL-17 or inhibitors of TNF-alpha. Thus patients who receive TNF-alpha inhibitors may be made mild courses of the Covid-19 disease and AS also. Patients who do not receive any immunosuppressive therapy manifest severe courses of the AS and Covid-19. However, the organism is individual and each person and each patient should approach it individually.

Conclusion

Patients with AS who experienced Covid-19 may be a severe course of disease duration compared to patients without Covid-19. AS patients with Covid-19 were observed higher disease activity than those without Covid-19 patients. Due to acute inflammation of the skeleton, this patient may be a faster radiological progression of disease than patients without Covid-19. Furthermore, patients with Covid-19 need to continue to observe deeply for a prolonged time to give reliable results.

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A complete list of references is in the editorial