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Intravenous treatment adherence of patients with chronic inflammatory rheumatic diseases during the COVID-19 pandemic: experience of a single center

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Introduction: Patients with chronic inflammatory rheumatic diseases (CIRD) who receive intravenous therapy requiring hospitalization are likely to be more affected than those with receiving oral therapy during COVID-19 pandemic. We aimed to investigate the effect of the COVID-19 pandemic on adherence to treatment in patients with CIRD receiving intravenous treatments.

Methods: We evaluated patients with CIRD who were treated with intravenous immunosuppressive therapy such as rituximab (RTX), cyclophosphamide (CTX), infliximab (IFX), tocilizumab (TCZ) and abatacept (ABA) in our inpatient rheumatology clinic. The patients' medical treatment compliance and clinical follow-up were evaluated. Treatment discontinuation was decided according to postponement of at least one dose and discontinuation of CIRD treatments. Demographics and clinical characteristics were compared between treatment-incompliant (TI) and treatment-compliant (TC) groups.

Results: A total of 181 CIRD patients were enrolled. Rheumatoid arthritis was the most common disease requiring intravenous immunosuppressive treatment followed by axial spondyloarthritis and Behçet's disease. Joint involvement was the most common followed by lung and kidney involvements. Rituximab was the most widely used intravenous immunosuppressive treatment for the CIRD. 34% patients have postponed at least one dose of their intravenous CIRD treatment and 25% discontinued. Fear of COVID-19 and SARS-CoV-2 positivity were the most common reasons. The TI group had a longer disease duration and a higher frequency of inflammatory arthritis than the TC group (p=0.013 and p=0.044, respectively).

Conclusions: Fear of COVID-19 and SARS-CoV-2 positivity seemed to be the major reasons for discontinuing/postponing intravenous treatments in CIRD patients. Patients with long disease duration and less systemic involvement may be more prone to discontinuing their treatments.

Key words: coronavirus, infliximab, intravenous infusion, patient adherence, rheumatology, rituximab.

INTRODUCTION

Coronavirus disease-2019 (COVID-19) has spread rapidly all over the world after it was first seen in China in December 2019. The World Health Organization declared the disease as a pandemic on March 11, 2020 [1]. Since the first case was seen in Turkey in March 2020, the disease has also spread rapidly in our country, with the number of cases exceeding 7 million and the number of deaths over 60 thousand [2]. This situation led to an increased burden on the health care systems and disruption of health services all over the world. In order to control the spread of COVID-19 and reduce the burden on the health care system, some actions have been taken to reduce the admission to outpatient clinics apart from social isolation, use of personal protective equipment, and curfews. In accordance with these measures, patients with chronic disease were enabled to continue their prescription drugs without attending to follow-ups. However, it is not known how well patients with life-threatening chronic diseases, requiring hospitalization or receiving intravenous treatment complied with their treatment.

The concerns and uncertainties aroused by COVID-19 preventions and fear of getting COVID-19 possibly have hampered treatment adherence especially in patients with chronic

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disease and using immunosuppressive drugs [3,4]. There are many studies to evaluate COVID-19 disease course with both autoimmune rheumatic diseases and immunosuppressive drugs [5-8]. In this context, the Turkish Rheumatology Association COVID-19 recommendations leave the continuation of immunosuppressive drugs to the decision of the patient and the physician together [9]. On the other hand, behavioral patterns of patients with chronic inflammatory rheumatic disease (CIRD) regarding the use of immunosuppressive drugs during the pandemic are not well known in real-life settings. The treatment compatibility of CIRD patients may vary depending on the type of chronic inflammatory disease, the duration of the disease, organ involvement, the type of treatment and its duration.

The CIRD patients who receive intravenous therapy requiring hospitalization are likely to be more affected than those with receiving oral therapy during this period. Patient or physician decisions, clinical features of CIRD and therapeutic features of drugs may affect treatment compliance in COVID-19 pandemic. It is important to determine the factors that affect the treatment compliance of a group of patients with CIRD who receive intravenous treatment and are more specific and sensitive than other CIRDs. Thus, we may ensure that these patients are less affected in the ongoing COVID-19 pandemic and possible similar situations in the future.

So, we aimed to investigate the effect of the COVID-19 pandemic on treatment compliance in patients with CIRD, and patient- or CIRD-related causes that may affect treatment compliance were also evaluated in this study.

MATERIAL AND METHODS

This study was designed as a retrospective study with approval by the hospital ethics committee (E2-21-497). An official permission was obtained from the Ministry of Health, to conduct this study dated 1 May 2021. The study was conducted in accordance with the principles of the Declaration of Helsinki. We evaluated patients with CIRD who were treated with immunosuppressive therapy such as rituximab (RTX), cyclophosphamide (CTX), infliximab (IFX), tocilizumab (TCZ) and abatacept (ABA) in our inpatient rheumatology clinic between March 2020 and September 2021. Demographics were noted from medical records including age, gender, comorbidities, and duration of illness. Multimorbidity was defined as the presence of two or more diseases or conditions. Type of CIRD and involved systems were also recorded. The number of patients with *severe acute respiratory syndrome coronavirus 2* (SARS-CoV-2) positivity and mortality were also noted.

The CIRD patients' clinical follow-up were evaluated from the medical records and medical treatment compliance questioned by telephone calls, upon verbal consent. Written consent could not be obtained due to study design. Treatment discontinuation was decided according to postponement of at least one dose and discontinuation of CIRD treatments. The causes of postponement and discontinuing the treatment were evaluated separately. COVID-19 vaccine, patient's own decision, fear of COVID-19, SARS-CoV-2 positivity and other infections, low serum immunoglobulin G (IgG) levels or surgery were questioned as potential reasons for treatment postponement. Patient's own decision, physician's decision, side effects, fear of COVID-19, SARS-CoV-2 positivity, pregnancy, refractory disease or malignancy were questioned as reasons for treatment discontinuation. Except for CIRD patients who developed mortality, both of postponed-treatment and discontinued-treatment groups were combined and named as the treatment-incompliant (TI) group. Patients who complied with the treatment protocols were called the treatment-compliant (TC) group. Demographics and clinical characteristics were compared between TI and TC groups. Rheumatoid arthritis (RA), axial spondyloarthritis (axSpA), psoriatic arthritis (PsA) defined as inflammatory arthritis. Systemic lupus erythematosus (SLE), Behçet's disease (BD), ANCA-associated vasculitis (AAV), IgG4-related disease (IgG4-RD), Sjögren's syndrome (SjS), systemic sclerosis (SSc), polyarteritis nodosa (PAN), sarcoidosis, Takayasu arteritis (TA) and adult-onset Still's disease (AOSD) were other CIRD diseases that were given intravenous immunosuppressive therapy.

Statistical analysis was performed using Statistical Package for Social Sciences version 24.0 (IBM Corp., Armonk, NY, USA). The conformity of the variables to the normal distribution was examined using visual tests such as histogram and probability graphs and analytical methods (Kolmogorov-Smirnov test). Chi-square test was used to compare categorical variables. Continuous data were presented as mean±standard

deviation (SD) or median with interquartile range (IQR) and categorical variables as numbers and percentages. Student-t test or Mann-Whitney-U test was used to compare continuous variables according to normality of variables. The p value of <0.05 was considered statistically significant.

RESULTS

Demographic and clinical characteristics of 181 CIRD patients included in the study were shown in Table 1. The mean age of the patients was 48.8±14.5 years and 54% were female. The frequency of comorbidities was 52% of the patients who had at least one comorbidity, and the rate of multimorbidity was 19%. RA is the most common disease requiring intravenous immunosuppressive treatment at inpatient clinics, followed by axSpA and BD. The median (IQR) duration of CIRD was 96 (84) months. Joint involvement was the most common involvement, followed by lung and kidney involvements. Rituximab was the most widely used intravenous immunosuppressive treatment for the CIRD.

Table 1
Demographic and clinical characteristics of the intravenous immunosuppressive treatment groups

	All patients, n=181	**RTX, n=77**	**CTX, n=24**	**IFX, n=70**	**TCZ, n=6**	**ABA, n=4**
Female, n (%)	98 (54)	58 (75)	5 (21)	27 (39)	4 (67)	4 (100)
Age, years, mean±SD	48.8±14.5	54.0±16.1	44.1±13.0	43.6±11.2	56.8±6.9	56.7±11.5
Comorbidity, n(%)	94 (52)	52 (68)	11 (46)	27 (39)	1 (17)	3 (75)
Multimorbidity, n(%)	35 (19)	21 (27)	6 (25)	7 (10)	0	1 (25)
- **Diabetes mellitus**	18 (10)	10 (13)	4 (17)	4 (6)	0	0
- **Hypertension**	73 (40)	42 (55)	6 (25)	22 (31)	1 (17)	2 (50)
- **Coronary artery disease**	10 (6)	6 (8)	2 (8)	1 (1)	0	0
- **Chronic kidney disease**	5 (3)	2 (3)	1 (4)	2 (3)	0	0
- **Hyperlipidemia**	4 (2)	2 (3)	1 (4)	1 (1)	0	0
- **Hypothyroidism**	15 (8)	9 (12)	2 (8)	3 (4)	0	1 (25)
- **COPD**	8 (4)	5 (7)	2 (8)	1 (1)	0	0
- **Asthma**	8 (4)	4 (5)	2 (8)	1 (1)	0	1 (25)
Rheumatic diseases, n(%)						
- **Rheumatoid arthritis**	63 (35)	51 (66)	0	2 (3)	6 (100)	4 (100)
- **Axial spondyloarthritis**	42 (23)	0	0	42 (60)	0	0
- **Systemic lupus erythematosus**	18 (10)	16 (21)	2 (8)	0	0	0
- **Behçet disease**	23 (13)	0	6 (26)	17 (24)	0	0
- **ANCA-associated vasculitis**	15 (8)	7 (9)	8 (33)	0	0	0
- **Others***	20 (12)	3 (4)	8 (33)	9 (13)	0	0
Duration of illness, months, median (IQR)	96 (84)	120 (116)	13 (42)	117 (75)	102 (117)	162 (69)
Organ and system involvements, n(%)						
- **Kidney**	15 (8)	8 (10)	6 (25)	1 (1)	0	0
- **Pulmonary**	28 (16)	20 (26)	7 (29)	1 (1)	0	0
- **Neurological**	10 (6)	4 (5)	3 (13)	3 (11)	0	0
- **Skin**	5 (3)	1 (1)	0	4 (6)	0	0
- **Joint**	93 (51)	38 (49)	1 (4)	45 (64)	6 (100)	4 (100)
- **Gastrointestinal tract**	1 (0.5)	1 (1)	0	0	0	0
- **Eyes, Nose and Sinus**	14 (8)	5 (7)	1(4)	8 (12)	0	0
- **Cardiovascular**	14 (8)	0	6 (25)	7 (10)	0	0

RTX; rituximab, CTX; cyclophosphamide, IFX; infliximab, TCZ; tocilizumab, ABA; abatacept, COPD; chronic obstructive pulmonary disease.

*Others; Psoriatic arthritis (n=6), IgG4-related disease (n=4), Sjögren's syndrome (n=1), systemic sclerosis (n=3), polyarteritis nodosa (n=1), sarcoidosis, Takayasu arteritis (n=1) and adult-onset Still's disease (n=1).

The causes of postponement and discontinuation of the intravenous treatments and the frequency COVID-19 disease and mortality of CIRD patients were shown in Table 2. A total of 34% patients have postponed at least one dose of their CIRD treatment since the onset of the COVID-19 pandemic. The most common causes of the postponement were fear of COVID-19 disease (14%), SARS-CoV-2 positivity (8%), and COVID-19 vaccine (4%). The frequencies of treatment postponement were similar among the type of immunosuppressive treatment groups (p=0.412). In our study, 25% of CIRD patients discontinued their intravenous immunosuppressive treatments. The most common causes of the discontinuing were fear of COVID-19 (9%), physician's decision (4%), pregnancy (5%) and SARS-CoV-2 positivity (3%). During the COVID-19 pandemic, 45% of patients had a decrease in frequency of rheumatology follow-ups and there was no statistical difference according to the type of immunosuppressive treatment.

Table 2

Reasons of treatment discontinuation/postponement and the frequency SARS-CoV-2 and mortality among the intravenous immunosuppressive treatments options

	All patients, n=181 (%)	**RTX, n=77 (%)**	**CTX, n=24 (%)**	**IFX, n=70 (%)**	**TCZ*, n=6 (%)**	**ABA, n=4 (%)**
≥1 dose treatment postponement	63 (34)	24 (31)	9 (38)	25 (36)	3(50)	3(75)
- **COVID-19 vaccine**	8 (4)	6 (8)	1 (4)	1 (1)	0	0
- **Fear of COVID-19 disease**	25 (14)	4 (5)	2 (8)	16 (23)	2 (33)	1 (25)
- **Other Infections**	6 (3)	1 (1)	3 (13)	1 (1)	0	1 (25)
- **SARS-CoV-2 positivity**	15 (8)	7 (9)	1 (4)	5 (7)	1 (17)	1 (25)
- **Low IgG levels**	3 (2)	3 (4)	0	0	0	0
- **Surgery**	6 (3)	2 (3)	2 (8)	2 (3)	0	0
Discontinuation of treatment	46 (25)	22 (31)	5 (21)	16 (23)	3(50)	0
- **Fear of COVID-19 disease**	17 (9)	6 (8)	1 (4)	8 (11)	2 (33)	0
- **Physician's decision**	7 (4)	4 (5)	2 (8)	0	1 (17)	0
- **Any side effect**	4 (2)	2 (3)	1 (4)	2 (3)	0	0
- **SARS-CoV-2 positivity**	6 (3)	4 (5)	0	2 (3)	0	0
- **Pregnancy**	8 (5)	6 (8)	0	2 (3)	0	0
- **Refractory disease**	1 (1)	0	0	0	0	0
- **Malignancy**	3 (2)	0	1 (4)	2 (3)	0	0
Decreased clinic follow-ups	81 (45)	34 (44)	6 (25)	35 (50)	5 (83)	2 (50)
SARS-CoV-2 positivity	36 (20)	21 (27)	2 (8)	11 (16)	1 (17)	1 (25)
Mortality due to COVID-19	5 (3)	5 (6)	0	0	0	0

RTX; rituximab, CTX; cyclophosphamide, IFX; infliximab (IFX), TCZ; tocilizumab, ABA; abatacept

* Two patients receiving tocilizumab switched from intravenous to subcutaneous therapy, and these patients were enrolled as continuation therapy.

When we compared the treatment compliance of 176 CIRD patients, treatment incompliance was seen in 108 (61%) CIRD patients. Comparison of the TI and TC groups was shown in Table 3. There was no statistical difference between the groups in terms of gender, age, comorbidities and multimorbidity. The TI group had a longer disease duration and a higher frequency of inflammatory arthritis than the TC group (p=0.013 and p=0.044, respectively). There was also no difference according to the subgroups of CIRDs (p=0.051) and the immunosuppressive treatment options between the treatment compatibility groups.

During this follow-up period, 20% of the patients had SARS-CoV-2 positivity. SARS-CoV-2 positivity was higher in patients receiving RTX compared to other drug groups. A total of 5 CIRD patients had mortality due to COVID-19 disease. While 3% overall mortality was observed in intravenous treatment CIRD patients, all of whom were receiving RTX.

Table 3
Comparison of the chronic inflammatory rheumatic disease patients clinical features according to treatment compliance groups

	TI group, n=108	**TC group, n=68**	**p**
Female, n (%)	61 (57)	36 (53)	0.646
Age, years, mean±SD	45.9±14.3	49.7±14.1	0.086
Comorbidity, n (%)	58 (54)	32 (47)	0.391
Multimorbidity, n(%)	22 (20)	9 (13)	0.226
Disease duration, months, median (IQR)	120 (105)	84 (96)	0.013
Inflammatory arthritis, n (%)	72 (67)	36 (33)	0.044
TI; treatment-incompliant, TC; treatment-compliant.			

DISCUSSION

In our study, among the CIRD patients who received intravenous immunosuppressive treatments, RA was the most common disease and joint involvement was the most common involvement requiring treatment and RTX was the most frequently used immunosuppressive agent. Approximately 40% of the CIRD patients were able to fully comply with their treatment protocols. The frequency of postponement and discontinuation of intravenous immunosuppressive treatments were 34% and 25%, respectively. The patient's own decision due to fear of COVID-19 disease was the most common reason for postponed-treatment and discontinued-treatment groups (14% and 9%, respectively). The frequency of the SARS-CoV-2 positivity and mortality due to COVID-19 was more common in CIRD patients with RTX treatment. Treatment compliance of CIRD patients decreased when disease duration was long and systemic involvement other than arthritis is less prominent.

In addition to immune system dysregulation, the organ involvements, disease activity, comorbidities and immunosuppressive treatments increases the susceptibility to infections [10]. This risk of infection varies according to the types of CIRD and immunosuppressive treatment agent [11,12]. Therefore, there have been some concerns, regarding the use of immunosuppressive therapies, both patient-wise and physician-wise [13]. Since uncontrolled disease activity is also a major factor for worse COVID-19 outcomes, international rheumatology societies such as the European League against Rheumatology (EULAR), the American College of Rheumatology (ACR) and the British Society for Rheumatology (BSR) suggested continuing necessary immunosuppressive agents in CIRD patients to prevent disease exacerbations [14–16]. Similarly, our national rheumatology associations recommended treatment continuation and that individuals with rheumatological diseases should not stop taking their medications because of the increased risk of disease exacerbation and infection [9]. The Ministry of Health of our country also allowed the drugs used in chronic diseases such as CIRD to be taken without a prescription so that they can be easily accessed without administering to the hospital. In this process, CIRD patients receiving oral immunosuppressive treatment could easily obtain their medications, but CIRD patients receiving intravenous immunosuppressive treatment had to apply to hospitals which cause disruptions in the treatment protocols.

Incompliance to intravenous immuno-suppressive treatment was observed in more than 60% of the CIRDs patients in our study. When the TI group was compared with the TC group, there was no statistical difference between the groups in terms of gender, comorbidities, subgroup of CIRD, and immunosuppressive treatments options except the disease duration and presence of inflammatory arthritis which was longer and more common in the TI group, respectively. As the duration of the disease increases, the number of comorbidities, organ damage due to the underlying disease and the number of drugs used could be expected to increase. In a study investigating adherence to treatment in patients with rheumatoid arthritis during the COVID-19 pandemic, it was shown that having multiple comorbidities increased the treatment compliance [1]. However, in contrast to this study, we found that comorbidities had no effect on treatment compliance but increased disease duration had a negative and systemic organ involvement had a positive effect on treatment compliance. Studies

have shown that long-term use of immunosuppressive drugs predisposes patients to anxiety and behavioral disorders [17]. In our study, treatment discontinuation was higher in patients with longer follow-up periods, in line with these findings. In a study conducted in Turkey, the treatment compatibility rate of rheumatic patients was reported as 77.6% [18]. In addition, in many studies, the treatment compatibility rate of the CIRD patients to oral and intravenous immunosuppressive treatments during the COVID-19 pandemic was found to be 75–80% [19–22]. We thought that the reason for the lower adherence to treatment in our study is that only the patients who received intravenous treatment were included in the study.

Thirty-four percent of the CIRD patients postponed at least one dose of intravenous immunosuppressive treatment, and 25% discontinued completely. Fear of the COVID-19 was found as the most common reason for both postponement and discontinuation in our study. Similar to our findings, fear of COVID-19 had been reported previously as the most common reason for interrupting or discontinuing immunosuppressive treatment [20–23]. In the postponed-treatment group, the most common intravenous immunosuppressive treatment was CTX with a rate of 38% but discontinuation of CTX was less common. The CIRD patients receiving CTX were newly diagnosed with severe organ involvement. Most of these patients had lung, kidney or cardiovascular involvement and the disease duration was 13 months. Possibly due to the life-threatening organ involvements and the short duration of the total treatment, these patients were more compliant with the treatment during the pandemic. Unlike other immunosuppressive treatment groups, the frequency of the non-COVID-19 infections was higher in the CTX group.

The second most common immune-suppressive treatment in the postponed-treatment group was IFX with a rate of 36%. Of the patients who received IFX treatment, 56% CIRD patients had ankylosing spondylitis, 24% had psoriatic arthritis and it was given for skin or joint involvements. Most of these patients delayed their treatment due to the fear of COVID-19 disease. A low frequency of vital organ involvements could be one reason for the postponed IFX treatment in our study. In line with EULAR's recently published recommendations regarding the COVID-19 pandemic, it is recommended that physical consultations and patient follow-up in patients with stable disease and treatment may be temporarily delayed for up to 6 months or alternatively performed remotely as needed [24]. Most of our CIRD patients who received IFX had spondyloarthritis, so it is possible that they could achieve relief with nonsteroidal anti-inflammatory drugs or topical treatments.

The third most common immuno-suppressive treatment in the postponed-treatment group was RTX with a rate %31. In the postponed-treatment group receiving RTX, the frequency of the SARS-Cov-2 positivity and COVID-19 vaccine were higher than other treatment groups. Rituximab binds to CD20 on the surface of B cells, causing B cell dysfunction and decreased antibody formation. Therefore, the antiviral immunity developed against SARS-CoV-2, which is caused by vaccination or having the disease, may be suppressed [25]. In accordance with this, in our study, RTX was the most frequently discontinued agent during the COVID-19 pandemic. When we evaluated the cause for RTX discontinuation, apart from the fear of COVID-19 and SARS-CoV-2 positivity, physician decision was also more common than other immuno-suppressive treatment groups.

The seroprevalence of SARS-CoV-2 and the disease outcomes in patients with immune-mediated inflammatory diseases were found to be similar to those of the general population [5, 26]. While increased systemic inflammation plays a role in the manifestation of the symptoms of COVID-19, it is thought that biological and targeted disease modifying drugs may be protective from them. Therefore, effective control of the inflammatory response in rheumatological disease may play a role in the COVID-19 pandemic. In our study, 20% of our patients were found to have COVID-19 with a positive PCR. SARS-CoV-2 positivity was observed in 27% of the patients who received RTX treatment, most frequently. Of the 77 patients who were followed up with RTX treatment, 5 died due to COVID-19. Previous studies have shown that patients receiving RTX have a worse course of COVID-19 and result in more COVID-19 related deaths than other immunosuppressives [27–29]. Humoral immune response may be impaired in patients receiving long-term RTX therapy, and this may change the course of the disease. However, it is not yet clear whether this treatment has a negative effect on the course of the disease in patients infected with SARS-CoV-2. In our study,

patients who received RTX treatment with a rate of 60% were the treatment group most affected by the pandemic due to treatment incompatibility. While 31% of these patients discontinued their treatment completely during the pandemic, 31% missed at least one treatment dose. 66% of the patient group who received this treatment had rheumatoid arthritis and the disease duration of the patients was 120 months. These patients had joint involvement in 49% without severe organ involvement. The long duration of the disease and the absence of serious organ involvement of the patients may have caused the patients to skip their treatment or to stop their treatment completely. Although RTX treatment was an easy treatment method to comply with before the pandemic due to less infusion and less frequent treatment dose intervals, it was one of the drugs most affected in adherence to treatment in our study due to its intravenous administration in the COVID-19 pandemic.

It is not known which inflammatory cytokine is most important in the pathogenesis of COVID-19, but interleukin 6 (IL-6) is thought to have a critical role [30]. Tocilizumab against IL-6 monoclonal antibody is used as an alternative therapy in the management of cytokine storm in the treatment of COVID-19. Although anti-cytokine intervention does not affect the risk of viral infection, it can inhibit the hyperinflammatory state, which may be beneficial in COVID-19 [31]. However, no data have been shown to be protective against COVID-19 in patients using TCZ for rheumatic disease. In our study, all of our 6 patients who received TCZ either interrupted or discontinued their treatment. Some of these patients switched from intravenous therapy to subcutaneous therapy, while others stopped their treatment. One patient postponed the treatment due to COVID-19 positivity. In a meta-analysis of patients using TCZ, no association was found between the use of TCZ and an increased risk of other infections [31]. In our study, none of the patients who used ABA discontinued the treatment. Observational studies of ABA have shown that the risk of infection with this drug is less than with other biologic drugs such as RTX and tumor necrosis factor-alpha inhibitors [32]. In our study, the number of patients who received TCZ and ABA was limited. For this reason, we cannot make clear comments about these drugs as other drugs.

There are some limitations in our study. First of all, our study is retrospective and the prospective follow-up of the patients is unknown. Secondly, the type of CIRD and organ involvement in our patient group were heterogeneous. Therefore, comparisons between intravenous treatments may have been influenced by disease diversity, especially, the number of patients who received ABA and TCZ in the study was very low. This situation makes it difficult to give clear information about the patient group receiving these treatments. Third, the inability to evaluate the disease activities of the patients and the unknown adherence to treatment before the COVID-19 pandemic are other limitations. Another limitation of the study is the fact that instead of patients' immunosuppressive treatments, when they did not receive treatment, may have affected their compliance with treatment by reducing their disease-related complaints with simple analgesic treatments such as NSAIDs.

CONCLUSIONS

In conclusion, it was found that the treatment compliance of CIRD who received intravenous immunosuppressive treatment in our hospital was lower than in other studies. Fear of COVID-19 and SARS-CoV-2 positivity seemed to be the major reasons. CIRD patients with long disease duration and less systemic involvement may be more prone to discontinuing their treatments.

Introducere: *Pacienții cu boli cronice inflamatorii reumatice (CIRD) care primeau terapie intravenoasă ce necesita spitalizare au fost mai degrabă afectați decât cei ce au primit terapie orală în timpul pandemiei COVID-19. Scopul studiului a fost de a evalua efectul pandemiei la aderența tratamentului pacienților cu CIRD ce au primit terapie intravenoasă.*

Metode: *Au fost evaluați pacienți cu CIRD tratați cu rituximab (RTX), ciclofosfamidă (CTX), infliximab (IFX), tocilizumab (TCZ) sau abatacept (ABA). Datele au fost preluate din fișele pacienților. Întreruperea tratamentului a fost considerată atunci când cel puțin o doză a fost neadministrată. Datele clinice și demografice au fost comparate între pacienții complianți (TC) și cei non-complianți (TI).*

Rezultate: *181 de pacienți cu CIRD au fost incluși în studiu. Pacienții cu AR (artrită reumatoidă) au fost pacienții cu cele mai multe administrări intravenoase ale tratamentului, fiind urmați de cei cu spondilartrite și boala Behcet. Afectarea articulară a fost cea mai frecventă, fiind urmată de afectarea pulmonară și renală. RTX a fost cel mai frecvent administrat medicament. 34% dintre pacienți au amânat cel puțin o doză a tratamentului și 25% au întrerupt tratamentul. Frica de COVID-19, precum și pozitivarea SARS-CoV-2 au fost cele mai frecvente cauze. Grupul TI a avut o durată mai lungă a bolii și o frecvență mai mare a artritei inflamatorii comparativ cu grupul TC (p=0.013, p=0.044).*

Concluzii: *Frica de COVID-19, precum și pozitivarea SARS-CoV-2 au fost cele mai frecvente cauze de întrerupere a tratamentului intravenos în cazul bolilor reumatologice inflamatorii. Riscul cel mai mare l-au avut pacienții cu o durată mai lungă a bolii, precum și cei ce au avut o boală mai puțin sistemică.*

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