

COVID-19 Reinfection in Rheumatologic Patients: Clinical Characteristics and Risk Factors

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Back ground, Method and Results

- COVID-19 and Rheumatologic diseases has been an important issue since the beginning of the COVID-19 pandemic. Increased possibility of being infected by COVID-19 or developing sever infection in rheumatologic patients due to the nature of their diseases and immunosuppressive medications, has raised serious concerns [1]. So far, no previous survey has studied COVID-19 reinfection in rheumatologic patients to find out whether these patients are more susceptible to COVID-19 reinfection or not. It is still unknown whether rheumatologic patients produce sufficient levels of protective antibodies after COVID-19 infection to prevent reinfections at least for a short time in the future.
- In this cross-sectional survey, rheumatologic patients attending rheumatologic clinics were interviewed to find rheumatic patients who had been infected by COVID-19 more than one time. A group of patients who had been infected by COVID-19 just for one time and another group who had never been infected by COVID-19, were considered as control group. Demographical and clinical characteristics of the three groups were compared to find possible risk factors of reinfection. Following data was collected from the patients of all the three groups: Age, sex, comorbidities, type of rheumatologic disease, rheumatologic disease medications (Glucocorticoids, conventional synthetic DMARDs or targeted synthetic DMARDs).
- We found 12 patients who have been infected by COVID-19 infection two times. RA and SPA were the commonest type of diseases (33.33%) and Prednisolone was the most commonly used type of drug among these patients (75%). Most of the patients were using at least one kind of cDMARDs. The mean interval between first and second infections was 6.29 months. Three patients claimed that they discontinued the immunosuppressive medication during COVID-19 infection course. Following tables report detailed information. We detected no significant differences for age, sex, type of rheumatologic disease, medications of rheumatologic disease and comorbidities between our three group.

Results

Rheumatic disease medication	Two times infected patients N=12	one time infected patients N=20	Patients who were not infected by COVID-19 N=35
Prednisolone: dose=<5 mg	9 (75)	18 (90)	30 (85.71)
5 mg< dose=<10 mg	7 (58.33)	14 (70)	25 (71.43)
	2 (16.66)	4 (20)	4 (11.43)
cDMARDs:			
Hydroxychloroquine	2 (16.66)	4 (20)	11 (31.43)
Methotrexate	3 (25)	7 (35)	13 (37.14)
Sulfasalazine	5 (41.66)	4 (20)	15 (42.86)
Leflunomide	1 (8.33)	2 (10)	10 (28.57)
Azathioprine	2 (16.66)	3 (15)	6 (17.14)
Mycophenolate mofetil	2 (16.66)	2 (10)	1 (2.86)
Biologic DMARDs:			
Adalimumab	2 (16.66)	2 (10)	5 (14.28)
Etanercept	0	0	2 (5.71)
Infliximab	1 (8.33)	0	1 (2.86)

Results

Variables	Two times infected patients	one time infected patients	Patients who were not infected by COVID-19	P-value
Age (mean, SD)	45, 10.18	46.60, 10.54	46.68, 10.76	0.887
Sex (Female)	11 (91.67)	17 (85)	32 (91.43)	0.73
Type of rheumatic disease:				
Rheumatoid arthritis	4 (33.33)	6 (30)	12 (34.28)	0.95
Spondyloarthropathies	4 (33.33)	5 (25)	12 (34.28)	0.76
Lupus (SLE)	2 (16.67)	6 (30)	8 (22.86)	0.68
Systemic sclerosis	2 (16.67)	2 (10)	2 (5.71)	0.51
Vasculitis	0	1 (5)	1 (2.86)	
Rheumatic medications:				
Prednisolone	9 (75)	18 (90)	30 (85.71)	0.51
c DMARD only	8 (66.67)	15 (75)	27 (77.14)	0.77
b DMARD only	1 (8.33)	1 (5)	1 (2.86)	0.72
c DMARD +b DMARD	2 (16.67)	1 (5)	7 (20)	0.32
Having underlying disease	2 (16.67)	5 (25)	4 (11.43)	0.42

Discussion and conclusion

- COVID-19 infection has been well studied in rheumatologic patients, but as far as we know, no previous survey has been studied COVID-19 reinfection in rheumatologic patients. Previous studies about COVID-19 infection in rheumatic patients have revealed different results, some of them indicated there is no increased susceptibility to COVID-19 infection or severe COVID-19 in rheumatologic patients. But, some other studies claimed that having a rheumatologic disease or using rheumatologic medications would be a risk factor for COVID-19 infection or its hospitalization [2-3]. Based on the current knowledge on COVID-19 infection, we know that healthy individuals produce protective antibodies against coronavirus about two or three weeks after being infected. This leads to temporary immunity against the disease which often lasts for about 6-months [4]. The mean interval between first and second infection in our patients was 6.29 months that shows rheumatologic patients have developed adequate immunity post COVID-19 infection (similar to healthy individuals). When we compared our three groups, we found no significant differences for demographical and clinical variables. Neither the type of rheumatologic disease, nor the type of medication (prednisolone. cDMARDs and bDMARDs) used to treat it, is a risk factor for COVID-19 reinfection.

References

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Keywords

COVID-19 reinfection, Rheumatologic diseases, Rheumatologic medications

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