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LETTER

DERMATOLOGIC THERAPY WILEY

COVID-19 infection risk in patients on immunosuppressive/immunomodulator therapy: A single center study

Dear editor,

Many dermatologic conditions need immunosuppressive therapy and following the outbreak of COVID-19 there were concerns about susceptibility of patients to infection or undesirable outcome.[1,2] In this cross-sectional study, we report the incidence of COVID-19 infection in patients treated with immunosuppressive drugs. After obtaining ethics committee approval we reviewed documents of all patients who were on systemic therapy for at least 2 months in our center (Appendix).

In this study, 162 patients participated. Mean age was 48 ± 14 years and 61.7% were female; 92(56.8%) subjects had psoriasis. Frequency of other dermatological conditions is shown in Table 1. Considering drug type, 122 patients were on immunosuppressive/immunomodulatory drugs and other received non-immunosuppressive therapy. Among all patients, 20(12.3%) had positive PCR test for COVID-19 and 16 of them were on immunosuppressive/immunomodulatory therapy. Considering treatment type, there was no significant difference in COVID-19 incidence between patients receiving immunosuppressive/immunomodulatory drugs and those who were on non-immunosuppressive therapy (p value = 0.418).Also there was no significant difference in COVID-19 infection risk when comparing biologic drugs (adalimumab and tofacitinib) and immunosuppressives (p value = 0.87). Mean age of COVID-19 infected patients was 47.95 ± 13.96. Except for four patients, all other with positive PCR test were symptomatic. Most common symptoms were fever (55%), shiver (50%), body pain (50%), and cough (35%). In patients receiving immunosuppressive/immunomodulatory drugs symptoms such as fever, shiver, cough, body pain, nausea, vomiting, diarrhea, and dyspnea were significantly more than those on non-immunosuppressive therapy (p value <0.05). Exposure history was positive in seven patients. Only one patient was admitted who was on methotrexate for dermatitis and suffer from cardiovascular disorders. Mortality was not observed. Among patients with psoriasis and LPP, COVID-19 was diagnosed in 13 and 4 of them, respectively; and no significant relationship was found between COVID-19 infection and immunosuppressive/immunomodulatory therapy in these patients (p value = 0.59 and 0.24, respectively). In COVID-19 infected psoriatic patients there was also no significant difference between treatment with adalimumab and other immunosuppressive drugs (p value = 0.75). We did not find any significant relationship between co-morbidities

TABLE 1 Frequency of dermatologic conditions, received medication and COVID-19 infection

	Psoriasis (92)		LPP (30)		AA (11)		Morphea (6)		Dermatitis (6)		DLE (5)		Other[a] (12)		Total (162)	
	COVID		COVID		COVID		COVID		COVID		COVID		COVID		COVID	
	+	−	+	−	+	−	+	−	+	−	+	−	+	−	+	−
MTX (50)	4	27	2	7	0	1	0	2	1	2	-	-	0	4	7	43
Acitretin (30)	4	17	0	4	–	–	–	–	0	1	0	1	0	3	4	26
HCQ[b] (10)	–	–	0	5	0	1	0	1	–	–	0	3	–	–	0	10
MMF (9)	–	–	2	6	–	–	–	–	0	1	–	–	–	–	2	7
Adalimumab (28)	4	22	–	–	–	–	–	–	–	–	–	–	0	2	4	24
Tofacitinib (7)	–	–	–	–	1	6	–	–	–	–	–	–	–	–	1	6
Cyclosporine (5)	–	–	0	3	–	–	–	–	–	–	–	–	0	2	0	5
Prednisolone (6)	–	1	–	–	0	1	0	2	1	0	–	–	0	1	1	5
Combination therapy (17)	1	12	0	1	0	1	0	1	–	–	0	1	–	–	1	16
Total (162)	13	79	4	26	1	10	0	6	2	4	0	5	0	12	20	142

Abbreviations: AA, alopecia areata; LE, discoid lupus erythematous; HCQ, hydroxychloroquine; LPP, lichen planopilaris; MMF: mycophenolate mofetil; MTX, methotrexate.

[a]Other dermatologic conditions include: vasculitis (3), mycosis fungoides (2), Haily-Haily disease (2), hidradenitis suppurativa (2), prurigo nodularis (1), graft-versus-host disease (1), erosive lichen planus (2).

[b]None of patients receiving hydroxychloroquine was infected.

such as diabetes, hypertensin, cardiovascular disorders, chronic lung disease and COVID-19 infection (p value = 0.46, 0.53, 0.69, and 0.66 respectively) overall and regarding to treatment type.

Having Intact immune response is an important factor while defending viral infections. During the first phase of immune response, type 1 IFN response facilitates viral clearance. On the other hand, an exaggerated immune response with increased level of pro-inflammatory cytokines develops in some patients with COVID-19 infection for unknown reason and leads to severe organ damages and even death.[3–6]

In a large study on psoriatic patients, Mahil et al. did not find worse prognosis in patients infected with COVID-19 receiving biologic treatment comparing to general population.[3] Another study, which was done in Spain, did not show increase risk of COVID-19 infection in these patients.[7] Additionally, methotrexate therapy was not associated with increased risk of hospitalization.[8,9] We did not find any significant difference in COVID-19 infection rate between psoriatic patients receiving biologic therapy and non-biologic immunosuppressive and also non-immunosuppressive drugs.

Previous studies did not show increase risk of infection in AA patients on biologic or other immunosuppressive drugs and discontinuation of therapy was accompanied with more recurrences.[10,11] In our study only one AA patient receiving tofacitinib was infected. Considering available data, treatment continuation is recommended in patients with AA on JAK inhibitor.

We did not find any relationship between COVID-19 infection and type of medication and our infected patients did not experience worse prognosis. Our findings are in accordance with previous studies. However, decision making whether to stop treatment should be done individually. Classic immunosuppressive drugs should be prescribed more cautiously than biologics.[5] Small sample size and unknown dosage were our limitations. In conclusion, continuing immunosuppressive/immunomodulatory therapy does not seem to increase mortality and hospitalization in patients with COVID-19 infection.

CONFLICT OF INTEREST

The authors declare no conflict of interest

AUTHOR CONTRIBUTIONS

Maryam Ghiasi: conception and design, revising the manuscript. **Maryam Nasimi**: conception and design, revising the manuscript, Given final approval. **Narges Ghandi**: conception and design, analysis and interpretation of data. **Vahideh Lajevardi**: acquisition of data. **Robabeh Abedini**: acquisition of data. **Arghavan Azizpour**: acquisition of data. **Mahshid Sadat Ansari**: drafting the manuscript, analysis and interpretation of data. **Azita Kheiltash**: analysis and interpretation of data. **Kamran Balighi**: acquisition of data.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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