with prednisone and methotrexate, and prednisone (Supplemental Table II).

Limitations of this study include the retrospective design as well as limited sample size at a single institution.

In summary, our study characterizes adalimumab drug survival in HS and shows that a history of IBD is associated with treatment continuation, whereas scalp and/or face involvement are more likely to result in discontinuation. Of the 95 patients, 19 (20.0%) were treated without weekly dosing of adalimumab. Future studies should evaluate whether the pathogenesis of IBD allows for increased adalimumab efficacy or whether patients stay on the medication longer due to better IBD control.

We hope this study will help in selecting patients with HS who will respond to adalimumab, increase awareness of proper HS adalimumab dosing, and assist physicians in choosing secondary treatments.

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Funding sources: None.

IRB approval status: Reviewed and approved by the University of Pittsburgh Institutional Review Board (IRB STUDY19100133).

Reprints not available from the authors.

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Conflicts of interest

None disclosed.

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https://doi.org/10.1016/j.jaad.2020.12.012

Seroconversion of severe acute respiratory syndrome coronavirus 2–infected patients on immunosuppression: A retrospective analysis

To the Editor: Patients who are taking immunosuppressive drugs are at an increased risk of coronavirus disease 2019 (COVID-19) complications, in part because of the propensity for immunosuppressive medications to interfere with pathogen-specific antibody seroconversion.[1,2] In addition, immunosuppression can theoretically inhibit severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)–specific antibody production, reducing viral clearance and vaccine efficacy. Patients and physicians alike are concerned about balancing the risks and benefits of immunosuppression in the setting of the COVID-19 pandemic. However, there is little evidence to provide guidance regarding seroconversion of patients taking immunosuppressive drugs after SARS-CoV-2 infection. We conducted a retrospective analysis of patients within our institution with polymerase chain reaction (PCR)–confirmed SARS-CoV-2 infection and overlapping immunosuppression to examine the rate of immunoglobulin M (IgM) and immunoglobulin G (IgG) antibody seroconversion.

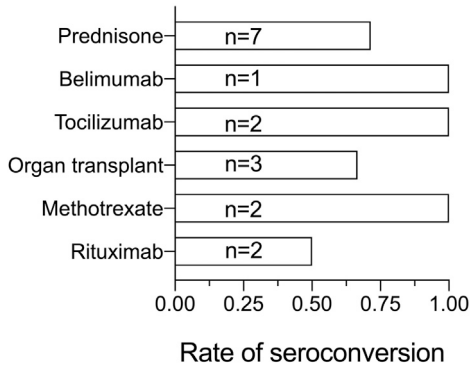

Fig 1. Rate of seroconversion of patients on immunosuppressive therapy. Patients with a polymerase chain reaction–confirmed diagnosis of severe acute respiratory syndrome coronavirus 2 infection, with immunosuppression during a defined 7-day seroconversion window, and with an available serology study ≥7 days after diagnosis are graphed. For patients taking multiple medications, a rank order of immunosuppressant was applied (in descending order: rituximab, belimumab, tocilizumab, prednisone, and methotrexate; see text for details). Solid organ transplant patients received a combination of mycophenolate mofetil and tacrolimus with or without prednisone and are graphed as a separate subgroup. Note that n refers to the number of patients in each category.

Table I. Detailed characteristics of patients included in the analysis

Pt #, symptoms, level of care, vitality	Age (y), sex	Medication 1, associated diagnosis	Dose, frequency*	Most recent administration, if applicable†	Medication 2, associated diagnosis	Dose, frequency*	Most recent administration, if applicable†	Medication 3, associated diagnosis	Dose, frequency	Most recent administration, if applicable†	Medication 4, associated diagnosis	Dose, frequency	Most recent administration, if applicable†	Serology date relative to positive PCR (days)	Reactive IgG serology
1, sx, OM	55, F	Rituximab, urticarial vasculitis	2000 mg every 6 months; IV	PM; −77 days	Omalizumab, urticarial vasculitis	300 mg monthly; SCI	PM; −9 days	Mycophenolate mofetil, urticarial vasculitis	2000 mg daily	PM	Hydroxychloroquine, urticarial vasculitis	400 mg daily	PM	+95	Y
2, sx, ICU, dead‡	45, M	Rituximab, APLAS	1000 mg every 4 months; IV	PM; −10 days	Eculizumab, APLAS	1200 mg every 2 weeks; IV	PM; −9 days	Cyclophospha-mide, APLAS	250 mg daily	PM	Prednisone, APLAS	15 mg daily	PM	+81	N
3, sx, HF	49, M	Mycophenolate sodium, renal transplant	720 mg daily	PM	Prednisone, renal transplant	5 mg daily	PM	Tacrolimus, renal transplant	6 mg daily	PM				+89	Y
4, sx, HF	68, M	Mycophenolate mofetil, lung transplant	500 mg daily	PM	Prednisone, lung transplant	15 mg daily	PM	Tacrolimus, lung transplant	1.75 mg daily	PM				+35	N
5, sx, HF	44, M	Mycophenolate mofetil, renal transplant	360 mg daily	PM	Tacrolimus, renal transplant	3 mg daily	PM							+11	Y
6, sx, OM	63, F	Belimumab, SLE	720 mg monthly; IV	PM; −50 days	Azathioprine, rheumatoid arthritis and SLE	100 mg daily	PM							+88	Y
7, sx, ICU	47, F	Adalimumab, rheumatoid arthritis	40 mg every 10 days	PM; −10 days	Methotrexate, rheumatoid arthritis	20 mg weekly; SCI	PM							+8	Y
8, sx, OM	47, M	Etanercept, psoriatic arthritis	50 mg weekly; SCI	PM	Methotrexate, psoriatic arthritis	15 mg weekly	PM							+78	Y
9, sx, ICU	66, F	Prednisone (taper), asthma exacerbation	40 mg daily × 7 days; 30 mg × 1 day	Taper begun on −7 days	Prednisone, myotonic dystrophy	5 mg daily	PM							+89	Y
10, sx, ICU	63, M	Tocilizumab, COVID-19	400 mg, once; IV	+6 days										+83	Y
11, sx, OM	65, M	Methotrexate, rheumatoid arthritis	17.5 mg weekly	PM										+107	Y
12, sx, ICU	27, M	Methylpredniso-lone, COVID-19	80 mg, once; IV	+1 day										+58	Y
13, sx, ICU	63, M	Prednisone, pseudotumor cerebri	20 mg daily	PM										+28	Y

14, sx, ICU	60, M	Prednisone, chronic autoimmune anemia	20 mg daily	PM		+21	Y	
15, sx, HF	89, M	Prednisone, bronchiectasis	5 mg daily	PM		+32	Y	
16, asx, N/A	64, F	Prednisone, polymyalgia rheumatica	1 mg daily	PM		+21	N	
17, sx, ICU	62, F	Prednisone, granulomatosis with polyangiitis	10 mg daily	PM		+8	N	

APLAS, Antiphospholipid antibody syndrome; *asx*, asymptomatic; *COVID-19*, coronavirus disease 2019; *F*, female; *HF*, hospital general medical floor (non-ICU); *ICU*, intensive care unit; *IgG*, immunoglobulin G; *IV*, intravenous; *M*, male; *N*, no; *OM*, outpatient management; *PCR*, polymerase chain reaction; *PM*, prior medication; *SCI*, subcutaneous injection; *SLE*, systemic lupus erythematosus; *sx*, symptomatic; *Y*, yes.
*Medications were administered orally unless otherwise specified (IV, SCI).
†Regularly scheduled prescribed medications are denoted as PMs. Dates of last administration prior to positive severe acute respiratory syndrome coronavirus 2 PCR test are recorded for intravenously administered agents.
‡Patient died from complications of COVID-19.

We screened approximately 1,490,000 patients with an encounter between September 16, 2019 and September 16, 2020 in the Massachusetts General Brigham system as potential study candidates based on 3 criteria: 1) PCR-confirmed SARS-CoV-2; 2) a prescription or infusion order for an immunomodulatory or immunosuppressive medication given around the time of diagnosis or within a 7-day seroconversion window; and 3) ≥1 IgG or IgM serology study ≥7 days after symptom onset. Patients with a hematologic malignancy or who were actively receiving chemotherapy were excluded. Rituximab was included if the patient had received it within the 6 months before infection, consistent with its immunologic half-life.[3] We created a "rank order" of presumed immunosuppressant potency as consistent with recent expert opinion.[2] Seventeen patients met our rigorous inclusion criteria (detailed methodology can be found in the Supplemental Material available via Mendeley at https://data.mendeley.com/datasets/2v39tzdf5r/1).

Of the 17 patients on active immunosuppressant treatment for nonmalignant conditions identified in our retrospective analysis with confirmed SARS-CoV-2 infection, 13 patients had evidence of IgG seroconversion and 4 did not have measurable seroconversion to either IgM or IgG (Fig 1). All IgM-positive individuals also had a reactive IgG serology. Of the patients that did not seroconvert, 1 patient was receiving rituximab, prednisone, cyclophosphamide, and eculizumab for antiphospholipid antibody syndrome, who ultimately died. One patient had a lung transplant. The remaining 2 patients were taking oral prednisone. A comprehensive summary of medications, diagnoses, and diagnostic tests is shown in Table I. In studies investigating SARS-CoV-2 seroconversion in a general population, 100% converted 17 to 19 days after symptom onset in one study[4] and 100% by day 14 in another study.[5]

While our retrospective analysis of seroconversion on immunosuppression is descriptive and contains a low number of patients, to our knowledge this is the most comprehensive dataset on this topic to date. Limitations include that the underlying disease requiring immunosuppressive drugs inherently confounds interpretation, and that hospitalized patients were more likely to receive requisite PCR and serology testing. We found that some patients taking rituximab, prednisone, or organ transplant immunosuppression regimens (mycophenolate mofetil, tacrolimus, with or without prednisone) did not seroconvert after SARS-CoV-2 infection; however, most patients (13/17)

undergoing immunosuppressive therapy did seroconvert. Our findings reported here do not provide evidence to warrant holding or altering immunotherapy regimens before vaccination with a messenger RNA–based vaccine or other vaccine strategies that preclude the potential for viral replication, although additional studies are necessary to investigate vaccination strategies in immunosuppressed patients.

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Funding sources: None.

IRB approval status: Approved by the Massachusetts General Brigham IRB (protocol 2020P003006).

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Conflicts of interest

Dr Merola is a consultant or investigator for Merck, Abbvie, Dermavant, Eli Lilly, Novartis, Janssen, UCB, Celgene, Sanofi, Regeneron, Arena, Sun Pharma, Biogen, Pfizer, EMD Sorono, Avotres, and Leo Pharma.

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https://doi.org/10.1016/j.jaad.2021.01.100

COVID-19 in melanoma patients: Results of the Spanish Melanoma Group Registry, GRAVID study

To the Editor: The COVID-19 pandemic, which has produced devastating effects on the health care system, has also affected the care of melanoma patients. During the first months of the pandemic, several studies from China pointed out that cancer patients infected with SARS-CoV-2 had a higher risk of complications.[1,2] In particular, there were concerns as to whether anti-cancer drugs might increase the aggressiveness of the infection. Conversely, some recent studies from western countries have found no association between mortality and cancer treatment.[3,4] Although an increased risk of death in patients with a cancer diagnosis is suggested, it is not fully confirmed.[3-5] Most studies have included a limited number of melanoma patients (Supplemental Table I available via Mendeley at 10.17632/5b8h5hszdg.1).[3-5]

The Spanish Melanoma Group (GEM) started a national registry of melanoma patients infected with SARS-CoV-2 in Spain (Supplemental Fig 4). Here, we present data from the first 70 patients entered between April 1 and June 8, 2020. Thirty-nine (56%) patients had stage IV melanoma, 8 (11%) had stage III, 10 (14%) had stage II, and 14 (20%) had stage I. Thirty-six (51%) patients were undergoing active anti-cancer treatment, including 22 (31%) patients treated with anti-PD-1 antibodies and 14 (20%) with BRAF plus MEK inhibitors. Thirty-eight (54%) patients had no evidence of active tumor (no macroscopic disease). According to the Response Evaluation Criteria in Solid Tumors (RECIST) guideline, version 1.1, there were 20 (29%) patients with stable disease or tumor response and 12 (17%) with tumor progression as their best radiological response. In terms of the clinical severity of the infection, 20 (29%) patients were asymptomatic or had mild symptoms, 12 (17%) had moderate symptoms, 18 (26%) developed severe symptoms, and 20 (28%) had critical complications (Table I, Supplemental Fig 5).

At the time of data cutoff, the infection had resolved in 37 (63%) patients, 8 (13%) had died due to melanoma, and 14 (24%) had died due to COVID-19. There were no significant differences in the clinical severity of the infection according to melanoma therapy. Severe or critical symptoms developed in 58% of patients who were in treatment with immunotherapy, 57% of patients who were in treatment with antitumoral BRAF plus MEK inhibitors, and 53% of patients who were not