

Prolonged viral replication in patients with hematologic malignancies hospitalized with COVID-19

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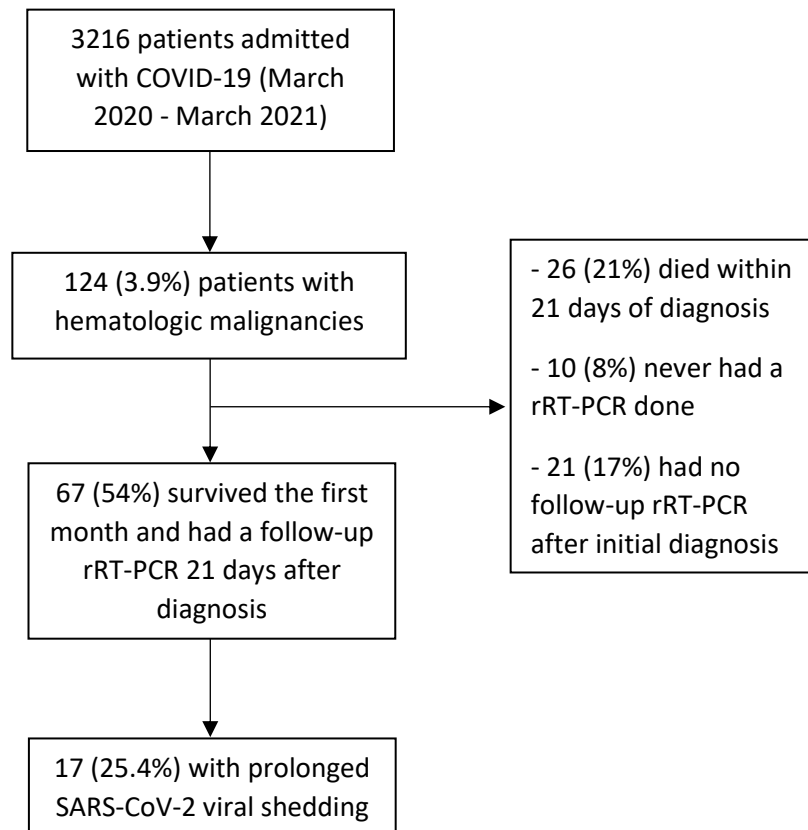
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Supplementary material. Prolonged viral replication in patients with hematologic malignancies hospitalized with COVID-19.

Supplementary Figure S1. Flowchart.



Supplementary Table S1. Main epidemiological and clinical characteristics of hematologic patients based on evaluability for viral persistence.

	EVALUABLE FOR VIRAL PERSISTENCE n=67 (%)	NOT EVALUABLE FOR VIRAL PERSISTENCE n=57 (%)	p-value
<i>Patient characteristics</i>			
Age > 65 years (%)	35 (52.2)	44 (77.2)	0.004
Sex male, n (%)	42 (62.7)	32 (56.1)	0.459
<i>Hematologic malignancy (%)</i>			
Lymphoma	30 (44.8)	17 (29.8)	0.087
Chronic lymphocytic leukemia	10 (14.9)	10 (17.5)	0.693
Multiple myeloma	7 (10.4)	6 (10.5)	0.989
Acute leukemia	6 (9)	7 (12.3)	0.547
Myelodysplastic syndrome	5 (7.5)	7 (12.3)	0.366
Others	6 (9)	7 (12.3)	0.547
<i>Prior HSCT</i>			
Allogenic HSCT	4 (6)	2 (3.5)	0.686
Autologous HSCT	12 (17.9)	3 (5.3)	0.051
Prior CAR-T cell therapy	3 (4.5)	0 (0)	0.249
<i>Other Comorbidities (%)</i>			
Hypertension	26 (38.8)	33 (57.9)	0.034

Diabetes mellitus	13 (19.4)	9 (15.8)	0.600
Chronic heart disease	21 (31.3)	20 (35.1)	0.659
Chronic lung disease	7 (10.4)	6 (10.5)	0.916
Chronic renal failure	12 (17.9)	13 (22.8)	0.498
Chronic liver disease	9 (13.4)	9 (15.8)	0.710
Solid organ transplant	5 (7.5)	3 (5.3)	0.725
Other clinical features (%)			
Prior corticosteroid use (3 months)	35 (52.2)	16 (28.1)	0.006
Prior chemotherapy (3 months)	36 (53.7)	24 (42.1)	0.197
Prior rituximab use (12 months)	15 (22.4)	4 (7.0)	0.029
Current neutropenia (< 500/mm ³)	6 (9.0)	4 (7.0)	0.751
Long-term lymphopenia	32 (47.8)	11 (19.3)	0.001
Hypogammaglobulinemia	23/62 (34.3)	14 (24.6)	0.140
Active hematologic disease	40 (59.7)	25 (43.9)	0.078

Abbreviations. HSCT: hematopoietic stem-cell transplant.

Supplementary Table S2. Main characteristics of hematologic patients with prolonged viral shedding.

Case	Sex, age (years)	Baseline disease and important risk factors	COVID-19 treatment	Days from 1 st to last positive rRT-PCR	Days from 1 st to last positive sgRNA	Clinical manifestation of prolonged infection	Sero-conversion (days since diagnosis)	Outcomes
1	Male, 35	- Acute lymphoblastic leukemia - Active hematologic malignancy - Hypogammaglobulinemia - Prior corticosteroid use - Long-term lymphopenia [#]	- Remdesivir: 10 days - Convalescent plasma (x2)	69	69	None	No	- Organizing pneumonia - Recovery
2	Male, 65	- High-grade lymphoma - Active hematologic malignancy - Prior rituximab - Hypogammaglobulinemia - Prior corticosteroid use	- Remdesivir: 10 days - Convalescent plasma (x3)	35	35	Fever	No	- Death
3	Female, 55	- Diffuse large B-cell lymphoma - Active hematologic malignancy - Hypogammaglobulinemia	- LPV/r, HCQ, AZM	30	30	None	Yes (+97d)	- Recovery
4	Male, 80	- Chronic lymphatic leukemia - Active hematologic malignancy - Prior rituximab	- LPV/r, HCQ, AZM	57	57	Fever and dyspnea	No	- Death
5	Male, 55	- Multiple myeloma - Active hematologic malignancy - Hypogammaglobulinemia - Prior corticosteroid use - Long-term lymphopenia [#]	- LPV/r, HCQ, AZM - Remdesivir: 10 days	36	22	None	Yes (+148d)	- Organizing pneumonia
6	Male, 64	- Diffuse large B-cell lymphoma - Active hematologic malignancy	- Remdesivir: 10 days (x2) - Convalescent plasma (x2)	82	40	Dyspnea	No	- Recovery

		<ul style="list-style-type: none"> - Prior rituximab - Prior CAR T-cell therapy - Hypogammaglobulinemia - Prior corticosteroid use - Long-term lymphopenia[#] 						
7	Female, 37	<ul style="list-style-type: none"> - Follicular lymphoma - Active hematologic malignancy - Prior rituximab - Hypogammaglobulinemia - Prior corticosteroid use 	<ul style="list-style-type: none"> - LPV/r, HCQ, AZM - Remdesivir: 10 days (x2) - Convalescent plasma 	64	51	Low-grade fever	No	<ul style="list-style-type: none"> - Organizing pneumonia - Recovery
8	Male, 52	<ul style="list-style-type: none"> - Anaplastic peripheral T-cell lymphoma - Active hematologic malignancy - Hypogammaglobulinemia - Prior corticosteroid use - Long-term lymphopenia[#] 	<ul style="list-style-type: none"> - Remdesivir: 10 days and 5 days - Convalescent plasma (x2) 	56	49	Persistent hypoxemia	NP	<ul style="list-style-type: none"> - ICU requirement - Death
9	Male, 59	<ul style="list-style-type: none"> - Follicular lymphoma - Active hematologic malignancy - Prior rituximab - Hypogammaglobulinemia - Prior corticosteroid use 	<ul style="list-style-type: none"> - Remdesivir: 5 days (x1) and 10 days (x2) - Convalescent plasma (x3) - Teicoplanin (x2), ivermectin (x2) 	136	120	None	No	<ul style="list-style-type: none"> - Recovery
10	Female, 61	<ul style="list-style-type: none"> - Hodgkin's lymphoma - Active hematologic malignancy - Prior corticosteroid use - Long-term lymphopenia[#] 	<ul style="list-style-type: none"> - Remdesivir: 5 days (x2) - Convalescent plasma (x2) - Ivermectin 	77	64	None	NP	<ul style="list-style-type: none"> - Death
11	Female, 67	<ul style="list-style-type: none"> - Multiple myeloma - Anti-BCMA CAR T-cell therapy - Hypogammaglobulinemia - Prior corticosteroid use 	<ul style="list-style-type: none"> - Remdesivir: 5 days and 10 days - Convalescent plasma (x2) 	77	54	Low-grade fever and dyspnea	No	<ul style="list-style-type: none"> - Organizing pneumonia - Recovery

		- Long-term lymphopenia [#]						
12	Male, 65	- Follicular lymphoma - Prior rituximab - Long-term lymphopenia [#]	- LPV/r, HCQ, AZM - Remdesivir: 5 days	115	107	Fever	No	- Organizing pneumonia - Recovery
13	Female, 46	- Diffuse large-B cell lymphoma post renal transplant - Active hematologic malignancy - Prior rituximab - Hypogammaglobulinemia - Prior corticosteroid use - Long-term lymphopenia [#]	- Remdesivir: 10 days (x2) - Convalescent plasma (x4) - Teicoplanin, LPV/r, HCQ, Ivermectin	262	140	Initially dyspnea. Later asymptomatic	No	- ICU requirement - Organizing pneumonia - Recovery
14	Female, 66	- Multiple myeloma - Active hematologic malignancy - Anti BCMA CAR T-cell therapy - Hypogammaglobulinemia - Prior corticosteroid use - Long-term lymphopenia [#]	- None	99	26	None	Yes (+44d)	- Organizing pneumonia - Recovery
15	Female, 82	- Diffuse large B-cell lymphoma - Active hematologic malignancy - Prior rituximab - Hypogammaglobulinemia - Prior corticosteroid use - Long-term lymphopenia [#]	- LPV/r, HCQ, AZM - Remdesivir: 10 days (x2) - Convalescent plasma (x3)	275	275	Low-grade fever and cough	No	- Death
16	Male, 84	- Mantle cell lymphoma - Active hematologic malignancy - Prior rituximab - Long-term lymphopenia [#]	- Remdesivir: 5 days	97	23	None	Yes (+111d)	- Recovery
17	Male, 55	- Diffuse large B-cell lymphoma - Active hematologic malignancy	- Remdesivir: 5 days and 10 days (x2)	96	93	None	No	- ICU requirement - Death

		<ul style="list-style-type: none"> - CAR T-cell therapy - Prior rituximab - Prior corticosteroid use - Long-term lymphopenia[#] 	- Convalescent plasma (x4)					
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*Abbreviations. rRT-PCR: real-time reverse transcription polymerase chain reaction; sgRNA: sub-genomic RNA; NP: not performed; LPV/r: lopinavir/ritonavir; HCQ: hydroxychloroquine; AZM: azithromycin; CAR: chimeric antigen receptor; ICU: intensive care unit.

[#]Long-term lymphopenia was defined as <900 lymphocytes/mm³ for at least one month.