Supplemental Methods

Search Concepts:

Concept 1:
("COVID"[Text Word] OR "COVID-19"[Text Word] OR "novel corona virus"[Text Word] OR "SARS-CoV-2"[Text Word] OR "COVID-19"[Supplementary Concept])

Concept 2:
("Rituximab"[Text Word] OR "Anti-CD20"[Text Word] OR "CD20 Antibody"[Text Word] OR "ofatumumab"[Text Word] OR "ocrelizumab"[Text Word] OR "obinutuzumab"[Text Word] OR "veltuzumab"[Text Word] OR "Rituximab"[MeSH Terms])

Concept 3:
"Agammaglobulinemia"[Mesh] OR "Hypogammaglobulin*"[tiab] OR "Agammaglobulin*"[tiab] OR "X-Linked Agammaglobulin*"[tiab] OR "APDS"[tiab] OR "PTEN"[tiab] OR "ARHGEF"[tiab] OR "SH3KBP1"[tiab] OR "CIN85"[tiab] OR "SEC61A1"[tiab] OR "RAC2"[tiab] OR "CD19 deficienc*"[tiab] "CD20 deficienc*"[tiab] OR "CD21 deficienc*"[tiab] OR "CD81 deficienc*"[tiab] OR "TRNT1"[tiab] OR "NFKB1"[tiab] OR "NFKB2"[tiab] OR "IKAROS"[tiab] OR "IKZF1"[tiab] OR "ATP6AP1"[tiab] OR "MOGS"[tiab] OR "TACI deficienc*"[tiab] OR "TNFRSF13B"[tiab] OR "BAFF"[tiab] OR "TNFRSF13C"[tiab] OR "IRF2BP2 deficienc*"[tiab] OR "AID deficienc*"[tiab] OR "AICDA"[tiab] OR "UNG deficienc*"[tiab] OR "INO80"[tiab] OR "MSH6"[tiab] OR "IgA deficienc*"[tiab] OR "IgG deficienc*"[Mesh] OR "IgG subclass deficienc*"[tiab] OR "antibody deficienc*"[tiab] OR "14q32"[tiab] OR "kappa chain deficienc*"[tiab] OR "IGKC"[tiab] OR "IgM deficienc*"[tiab] OR "CARD11"[tiab] OR "primary immunodeficienc*"[tiab]

S1: Summary of Case reports of COVID-19 infection among patients with anti-CD20 therapy.

Category of disease	Disease	Anti-CD20 medication	Time since last infusion (months)	Outcome	Severity	Positive serology after recovery	Reported days of symptoms	Reference
Hematologic								
	Primary mediastinal large B-cell lymphoma	Rituximab	0	Recovered	Hospitalized		29	[80]
	CD20+ B cell acute lymphoblastic leukemia	Rituximab	0.25		ICU stay			[81]
	Mantle Cell Lymphoma	Rituximab	0.5	Death	Hospitalized			[82]
	Marginal zone lymphoma	Rituximab	0.5	Recovered	Hospitalized	Yes	86	[83]
	Diffuse large B cell lymphoma	Rituximab	0.5	Death	Hospitalized			[82]
	Follicular lymphoma	Rituximab	4	Still symptomatic	Hospitalized	No	51	[84]
	Chronic lymphocytic leukemia	Rituximab	6	Recovered	Hospitalized		79	[85]
	Nodal marginal zone lymphoma	Rituximab	8	Recovered	Hospitalized		24	[86]
	Non-Hodgkin lymphoma	Obinutuzumab	1	Recovered	Hospitalized	No	90	[87]
	Follicular lymphoma	Obinutuzumab	2	Recovered	Hospitalized	Yes	140	[88]
	Sub-totals	*Rituximab= 8/10 Obinutuzumab= 2/10*	*Average= 2.3*	*Recovered=6/9 Still Symptomatic=1/9 Death=2/9*	*Outpatient=0/10 Hospitalized=9/10 ICU stay=1/10*	*Yes=2/4 No=2/4*	*Average= 71.3*	
Nephrotic								
	Membranous nephropathy	Rituximab	1	Recovered	Hospitalized		26	[89]
	Cryoglobulinemic glomerulonephritis	Rituximab	7	Recovered	ICU stay		30	[90]

Sub-totals	*Rituximab= 2/2*	*Average= 4*	*Recovered=2/2* *Still Symptomatic=0/2* *Death=0/2*	*Outpatient=0/2* *Hospitalized=1/2* *ICU stay=1/2*	*Yes=* *No=*	*Average= 28*	

Vasculitis

Granulomatosis with polyangiitis (GPA)	Rituximab		Recovered	Hospitalized		45	[91]
GPA	Rituximab		Death	ICU stay		45	[92]
GPA	Rituximab	0	Recovered	Hospitalized		29	[93]
GPA	Rituximab	0.5	Recovered	Hospitalized		48	[94]
EosiNophilic GPA	Rituximab	0.75	Recovered	Hospitalized		14	[95]
GPA	Rituximab	1	Recovered	Hospitalized	No	40	[96]
GPA	Rituximab	2	Recovered	Hospitalized		19	[97]
Myeloperoxidase-ANCA microscopic polyangiitis	Rituximab	4	Recovered	Outpatient	Yes	14	[98]
GPA	Rituximab	5	Recovered	Hospitalized	No	29	[99]
Sub-totals	*Rituximab=9/9*	*Average= 1.9*	*Recovered= 8/9* *Still Symptomatic=0/9* *Death= 1/9*	*Outpatient=1/9* *Hospitalized=7/9* *ICU stay= 1/9*	*Yes= 1/3* *No= 2/3*	*Average= 31.4*	

Multiple Sclerosis

Multiple Sclerosis	Ocrelizumab	0.25	Recovered	Outpatient		0	[100]
Multiple Sclerosis	Ocrelizumab	1	Recovered	Outpatient	No	0	[101]
Multiple Sclerosis	Ocrelizumab	2	Recovered	Outpatient	No	30	[102]
Multiple Sclerosis	Ocrelizumab	3	Recovered	Hospitalized	Yes	26	[101]
Multiple Sclerosis	Ocrelizumab	3	Recovered	Outpatient		3	[103]
Multiple Sclerosis	Ocrelizumab	4	Recovered	Outpatient		3	[101]
Multiple Sclerosis	Ocrelizumab	4	Recovered	Outpatient	No	2	[102]
Multiple Sclerosis	Ocrelizumab	5	Recovered	Hospitalized	Yes	24	[104]
Multiple Sclerosis	Ocrelizumab	5	Recovered	Outpatient	Yes	14	[105]
Multiple Sclerosis	Ocrelizumab	6	Recovered	Hospitalized	No	19	[104]
Multiple Sclerosis	Ocrelizumab	7	Recovered	Hospitalized			[106]
Multiple Sclerosis	Ocrelizumab	7	Recovered	Outpatient	No	7	[101]
Multiple Sclerosis	Ocrelizumab	7	Recovered	Outpatient	Yes	0	[101]
Multiple Sclerosis	Ocrelizumab	14	Recovered	Hospitalized	Yes	10	[101]
Multiple Sclerosis	Ocrelizumab		Recovered	Outpatient			[107]
Multiple Sclerosis	Ocrelizumab		Recovered	Hospitalized		10	[108]
Multiple Sclerosis	Rituximab	2			No		[109]

Multiple Sclerosis	Rituximab	2			No		[109]
Multiple Sclerosis	Rituximab	2	Recovered	Hospitalized	No	14	[110]
Multiple Sclerosis	Rituximab	4			No		[109]
Multiple Sclerosis	Rituximab	5	Recovered	Hospitalized		7	[111]
Multiple Sclerosis	Rituximab	7	Recovered	Hospitalized	No	16	[112]
Multiple Sclerosis	Rituximab	8	Recovered	Hospitalized		9	[101]
Sub-totals	*Rituximab= 7/23* *Ocrelizumab=16/23*	*Average= 4.7*	*Recovered= 20/20* *Still Symptomatic= 0/20* *Death=0/20*	*Outpatient= 10/20* *Hospitalized= 10/20* *ICU stay= 0/20*	*Yes=5/15* *No=10/15*	*Average= 10.8*	

Neuromyelitis optica spectrum disorders

Neuromyelitis optica - spectrum disorders	Ofatumumab	0.33			No		[109]
Aquaporin-4- positive neuromyelitis optica spectrum disorder	Rituximab		Recovered	Hospitalized		36	[113]
Neuromyelitis optica spectrum disorder	Rituximab	5	Recovered	ICU stay	Yes	46	[110]
Sub-totals	*Rituximab= 2/3* *Ofatumumab = 1/3*	*Average= 2.7*	*Recovered= 2/2* *Still Symptomatic=0/2* *Death= 0/2*	*Outpatient=0/2* *Hospitalized=1/2* *ICU stay=1/2*	*Yes= 1/2* *No=1/2*	*Average= 41*	

Rheumatologic

Polymyositis and Sjögren's syndrome	Rituximab	2	Recovered	ICU stay	No	32	[114]
Polymyositis and Sjögren's syndrome	Rituximab	2	Recovered	ICU stay		63	[114]
Rheumatoid Arthritis	Rituximab	0.5	Death	ICU stay		14	[115]
Rheumatoid Arthritis	Rituximab		Death			17	[115]
Systemic Sclerosis	Rituximab	3	Recovered	ICU stay		19	[116]
Systemic Sclerosis	Rituximab	5	Still symptomatic	ICU stay		23	[116]
Systemic Sclerosis	Rituximab	10	Still symptomatic	Hospitalized		15	[116]
Sub-totals	*Rituximab= 7/7*	*Average= 3.7*	*Recovered=3/7* *Still Symptomatic=2/7* *Death=2/7*	*Outpatient=0/7* *Hospitalized=1/7* *ICU stay=6/7*	*Yes=0/1* *No= 1/1*	*Average= 26.1*	

Overall totals	*Obinutuzumab=2* *Ocrelizumab=16* *Ofatumumab=1* *Rituximab=35*	*Average= 3.5* *N=48*	*Recovered= 41* *Still Symptomatic= 3* *Death=5*	*Outpatient= 11* *Hospitalized= 31* *ICU stay= 10*	*Yes= 9* *No= 16*	*Average= 28.8* *N=45*