

Supplementary data

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Supplementary data 1 *Search strategy*

Database: PubMed, MEDLINE, Web of Science, and CINAHL Plus Full Text

Limit: English language, an article published between inception - July 2021

The search terms:

1. COVID-19. (severe acute respiratory syndrome coronavirus 2 OR 2019-nCoV OR Wuhan coronavirus OR SARS-CoV-2 OR 2019 novel coronavirus OR COVID-19 virus OR coronavirus disease 2019 virus OR nCoV OR COVID-19 OR SARS-CoV-2)

2.COVID-19 Vaccine. (COVID 19 Vaccine* OR COVID-19 Vaccine* OR COVID-19 Virus Vaccine* OR COVID 19 Virus Vaccine* OR COVID19 Virus Vaccine* OR COVID19 Vaccine* OR SARS-CoV-2 Vaccine* OR SARS CoV 2 Vaccine* OR SARS2 Vaccine* OR Coronavirus Disease 2019 Vaccine* OR Coronavirus Disease 2019 Virus Vaccine* OR Coronavirus Disease-19 Vaccine* OR 2019-nCoV Vaccine* OR 2019 Novel Coronavirus Vaccine* OR SARS Coronavirus 2 Vaccine*)

3. Embolism and thrombosis. (Embolisms OR Embolus OR Gas Embolism* OR Air Embolism* OR Amniotic Fluid Embolism* OR Fat Embolism* OR Fat Embolism Syndrome OR Pulmonary Embolism* OR Pulmonary Thromboembolism* OR Pulmonary Infarct* OR Thromboembolisms OR Paradoxical Embolism* OR Crossed Embolism* OR Cerebral Embolism and Thrombosis OR Brain Embolism and Thrombosis OR Carotid Artery Thromboses OR Carotid Thrombosis OR External Carotid Artery Thrombosis OR Internal Carotid Artery Thrombosis OR Common Carotid Artery Thrombosis OR Intracranial Embolism OR Brain Embol* OR Cerebral Embol* OR Intracranial Thrombo* OR Intracranial Thrombus OR Cerebral Thrombus OR Cerebral Thrombo* OR Brain Thrombo* OR Brain Thrombus OR Intracranial Sinus Thrombo* OR Sinus Thrombos* OR Cranial Venous Sinus Thrombosis OR Cranial Sinus Thrombo* OR Petrous Sinus Thrombophlebiti* OR Petrous Sinus Thrombos* OR Intracranial Sinus Thrombophlebiti* OR Venous

Thromboembolism OR Thromboses OR Thrombus OR Blood Clot* OR Coronary Thrombo*
 OR Phlebothrombos* OR Venous Thrombos* OR Deep Vein Thrombos* OR Deep Venous
 Thrombos*)

Database (Search time)	Search	Search String
PubMed and MEDLINE (June 20, 2021)	1	"severe acute respiratory syndrome coronavirus 2"[Title/Abstract] OR "2019-nCoV"[Title/Abstract] OR "wuhan coronavirus"[Title/Abstract] OR "SARS-CoV-2"[Title/Abstract] OR "2019 novel coronavirus"[Title/Abstract] OR "covid 19 virus"[Title/Abstract] OR "coronavirus disease 2019 virus"[Title/Abstract] OR "ncov"[Title/Abstract] OR "COVID-19"[Title/Abstract] OR "SARS-CoV-2"[MeSH Terms] OR "SARS-CoV-2"[All Fields] OR "SARS-CoV-2"[All Fields]
	2	"covid 19 vaccine*"[Title/Abstract] OR "covid 19 vaccine*"[Title/Abstract] OR (("COVID-19"[All Fields] OR "COVID-19"[MeSH Terms] OR "covid 19 vaccines"[All Fields] OR "covid 19 vaccines"[MeSH Terms] OR "covid 19 serotherapy"[All Fields] OR "covid 19 serotherapy"[Supplementary Concept] OR "covid 19 nucleic acid testing"[All Fields] OR "covid 19 nucleic acid testing"[MeSH Terms] OR "covid 19 serological testing"[All Fields] OR "covid 19 serological testing"[MeSH Terms] OR "covid 19 testing"[All Fields] OR "covid 19 testing"[MeSH Terms] OR "SARS-CoV-2"[All Fields] OR "SARS-CoV-2"[MeSH Terms] OR "severe acute respiratory syndrome coronavirus 2"[All Fields] OR "ncov"[All Fields] OR "2019-nCoV"[All Fields] OR ("Coronavirus"[MeSH Terms] OR "Coronavirus"[All Fields] OR "CoV"[All Fields]) AND 2019/11/01:3000/12/31[Date - Publication])) AND "virus vaccine*"[Title/Abstract] OR (("COVID-19"[All Fields] OR "COVID-19"[MeSH Terms] OR "covid 19 vaccines"[All Fields] OR "covid 19 vaccines"[MeSH Terms] OR "covid 19 serotherapy"[All Fields] OR "covid 19 serotherapy"[Supplementary Concept] OR "covid 19 nucleic acid testing"[All Fields] OR "covid 19 nucleic acid testing"[MeSH Terms] OR "covid 19 serological testing"[All Fields] OR "covid 19 serological testing"[MeSH Terms] OR "covid 19 testing"[All Fields] OR "covid 19 testing"[MeSH Terms] OR "SARS-CoV-2"[All Fields] OR "SARS-CoV-2"[MeSH Terms] OR "severe acute respiratory syndrome coronavirus 2"[All Fields] OR "ncov"[All Fields] OR "2019-nCoV"[All Fields] OR ("Coronavirus"[MeSH Terms] OR

Database (Search time)	Search	Search String
		<p>"Coronavirus"[All Fields] OR "CoV"[All Fields]) AND 2019/11/01:3000/12/31[Date - Publication])) AND "virus vaccine*"[Title/Abstract] OR (("COVID-19"[MeSH Terms] OR "COVID-19"[All Fields] OR "COVID19"[All Fields]) AND "virus vaccine*"[Title/Abstract]) OR "covid19 vaccine*"[Title/Abstract] OR "sars cov 2 vaccine*"[Title/Abstract] OR "sars cov 2 vaccine*"[Title/Abstract] OR ("SARS2"[All Fields] AND "vaccine*"[Title/Abstract]) OR "coronavirus disease 2019 vaccine*"[Title/Abstract] OR (("COVID-19"[MeSH Terms] OR "COVID-19"[All Fields] OR "coronavirus disease 2019"[All Fields]) AND "virus vaccine*"[Title/Abstract]) OR "coronavirus disease 19 vaccine*"[Title/Abstract] OR "2019 ncov vaccine*"[Title/Abstract] OR ("2019"[All Fields] AND "novel coronavirus vaccine*"[Title/Abstract]) OR (("SARS-CoV-2"[MeSH Terms] OR "SARS-CoV-2"[All Fields] OR "sars coronavirus 2"[All Fields]) AND "vaccine*"[All Fields])</p>
	3	<p>((("Embolisms"[Title/Abstract] OR "Embolus"[Title/Abstract] OR "gas embolism*"[Title/Abstract] OR "air embolism*"[Title/Abstract] OR "amniotic fluid embolism*"[Title/Abstract] OR "fat embolism*"[Title/Abstract] OR "fat embolism syndrome"[Title/Abstract] OR "pulmonary embolism*"[Title/Abstract] OR "pulmonary thromboembolism*"[Title/Abstract] OR "pulmonary infarct*"[Title/Abstract] OR "Thromboembolisms"[Title/Abstract] OR "paradoxical embolism*"[Title/Abstract] OR "crossed embolism*"[Title/Abstract] OR "cerebral embolism"[Title/Abstract]) AND "Thrombosis"[Title/Abstract]) OR "brain embolism"[Title/Abstract]) AND "Thrombosis"[Title/Abstract]) OR "carotid artery thromboses"[Title/Abstract] OR "carotid thrombosis"[Title/Abstract] OR "external carotid artery thrombosis"[Title/Abstract] OR "internal carotid artery thrombosis"[Title/Abstract] OR "common carotid artery thrombosis"[Title/Abstract] OR "intracranial embolism"[Title/Abstract] OR "brain embol*"[Title/Abstract] OR "cerebral embol*"[Title/Abstract] OR "intracranial thrombo*"[Title/Abstract] OR "intracranial thrombus"[Title/Abstract] OR "cerebral thrombus"[Title/Abstract] OR "cerebral thrombo*"[Title/Abstract] OR "brain</p>

Database (Search time)	Search	Search String
		thrombo*[Title/Abstract] OR "brain thrombus"[Title/Abstract] OR "intracranial sinus thrombo*[Title/Abstract] OR "sinus thrombos*[Title/Abstract] OR "cranial venous sinus thrombosis"[Title/Abstract] OR "cranial sinus thrombo*[Title/Abstract] OR ("Petrous"[All Fields] AND "sinus thrombophlebiti*[Title/Abstract]) OR ("Petrous"[All Fields] AND "sinus thrombos*[Title/Abstract]) OR (("Intracranial"[All Fields] OR "intracranially"[All Fields]) AND "sinus thrombophlebiti*[Title/Abstract]) OR "venous thromboembolism"[Title/Abstract] OR "Thromboses"[Title/Abstract] OR "Thrombus"[Title/Abstract] OR "blood clot*[Title/Abstract] OR "coronary thrombo*[Title/Abstract] OR "phlebothrombos*[Title/Abstract] OR "venous thrombos*[Title/Abstract] OR "deep vein thrombos*[Title/Abstract] OR ("Deep"[All Fields] AND ("veins"[MeSH Terms] OR "veins"[All Fields] OR "Venous"[All Fields]) AND "thrombos*[All Fields])
	4	1 AND 2 AND 3
Web of Science (June 20, 2021)	1	(TI=(severe acute respiratory syndrome coronavirus 2 OR 2019-nCoV OR Wuhan coronavirus OR SARS-CoV-2 OR 2019 novel coronavirus OR COVID-19 virus OR coronavirus disease 2019 virus OR nCoV OR COVID-19 OR SARS-CoV-2) OR AB=(severe acute respiratory syndrome coronavirus 2 OR 2019-nCoV OR Wuhan coronavirus OR SARS-CoV-2 OR 2019 novel coronavirus OR COVID-19 virus OR coronavirus disease 2019 virus OR nCoV OR COVID-19 OR SARS-CoV-2))
	2	(TI=(COVID 19 Vaccine* OR COVID-19 Vaccine* OR COVID-19 Virus Vaccine* OR COVID 19 Virus Vaccine* OR COVID19 Virus Vaccine* OR COVID19 Vaccine* OR SARS-CoV-2 Vaccine* OR SARS CoV 2 Vaccine* OR SARS2 Vaccine* OR Coronavirus Disease 2019 Vaccine* OR Coronavirus Disease 2019 Virus Vaccine* OR Coronavirus Disease-19 Vaccine* OR 2019-nCoV Vaccine* OR 2019 Novel Coronavirus Vaccine* OR SARS Coronavirus 2 Vaccine*) OR AB=(COVID 19 Vaccine* OR COVID-19 Vaccine* OR COVID-19 Virus Vaccine* OR COVID19 Virus Vaccine* OR COVID19 Vaccine* OR SARS-CoV-2 Vaccine* OR SARS CoV 2 Vaccine* OR SARS2 Vaccine* OR Coronavirus Disease 2019 Vaccine* OR Coronavirus Disease 2019 Virus Vaccine* OR Coronavirus Disease-19 Vaccine* OR 2019-nCoV Vaccine* OR 2019 Novel

Database (Search time)	Search	Search String
		Coronavirus Vaccine* OR SARS Coronavirus 2 Vaccine*))
	3	(TI=(Embolisms OR Embolus OR Gas Embolism* OR Air Embolism* OR Amniotic Fluid Embolism* OR Fat Embolism* OR Fat Embolism Syndrome OR Pulmonary Embolism* OR Pulmonary Thromboembolism* OR Pulmonary Infarct* OR Thromboembolisms OR Paradoxical Embolism* OR Crossed Embolism* OR Cerebral Embolism and Thrombosis OR Brain Embolism and Thrombosis OR Carotid Artery Thromboses OR Carotid Thrombosis OR External Carotid Artery Thrombosis OR Internal Carotid Artery Thrombosis OR Common Carotid Artery Thrombosis OR Intracranial Embolism OR Brain Embol* OR Cerebral Embol* OR Intracranial Thrombo* OR Intracranial Thrombus OR Cerebral Thrombus OR Cerebral Thrombo* OR Brain Thrombo* OR Brain Thrombus OR Intracranial Sinus Thrombo* OR Sinus Thrombos* OR Cranial Venous Sinus Thrombosis OR Cranial Sinus Thrombo* OR Petrous Sinus Thrombophlebiti* OR Petrous Sinus Thrombos* OR Intracranial Sinus Thrombophlebiti* OR Venous Thromboembolism OR Thromboses OR Thrombus OR Blood Clot* OR Coronary Thrombo* OR Phlebothrombos* OR Venous Thrombos* OR Deep Vein Thrombos* OR Deep Venous Thrombos*) OR AB=(Embolisms OR Embolus OR Gas Embolism* OR Air Embolism* OR Amniotic Fluid Embolism* OR Fat Embolism* OR Fat Embolism Syndrome OR Pulmonary Embolism* OR Pulmonary Thromboembolism* OR Pulmonary Infarct* OR Thromboembolisms OR Paradoxical Embolism* OR Crossed Embolism* OR Cerebral Embolism and Thrombosis OR Brain Embolism and Thrombosis OR Carotid Artery Thromboses OR Carotid Thrombosis OR External Carotid Artery Thrombosis OR Internal Carotid Artery Thrombosis OR Common Carotid Artery Thrombosis OR Intracranial Embolism OR Brain Embol* OR Cerebral Embol* OR Intracranial Thrombo* OR Intracranial Thrombus OR Cerebral Thrombus OR Cerebral Thrombo* OR Brain Thrombo* OR Brain Thrombus OR Intracranial Sinus Thrombo* OR Sinus Thrombos* OR Cranial Venous Sinus Thrombosis OR Cranial Sinus Thrombo* OR Petrous Sinus Thrombophlebiti* OR Petrous Sinus Thrombos* OR Intracranial Sinus Thrombophlebiti* OR Venous Thromboembolism OR Thromboses OR Thrombus OR Blood Clot* OR Coronary Thrombo* OR Phlebothrombos* OR Venous Thrombos* OR Deep Vein Thrombos* OR Deep Venous Thrombos*))

Database (Search time)	Search	Search String
	4	1 AND 2 AND 3
CINAHL Plus Full Text (June 20, 2021)	1	TI(severe acute respiratory syndrome coronavirus 2 OR 2019-nCoV OR Wuhan coronavirus OR SARS-CoV-2 OR 2019 novel coronavirus OR COVID-19 virus OR coronavirus disease 2019 virus OR nCoV OR COVID-19 OR SARS-CoV-2) OR AB(severe acute respiratory syndrome coronavirus 2 OR 2019-nCoV OR Wuhan coronavirus OR SARS-CoV-2 OR 2019 novel coronavirus OR COVID-19 virus OR coronavirus disease 2019 virus OR nCoV OR COVID-19 OR SARS-CoV-2))
	2	TI=(COVID 19 Vaccine* OR COVID-19 Vaccine* OR COVID-19 Virus Vaccine* OR COVID 19 Virus Vaccine* OR COVID19 Virus Vaccine* OR COVID19 Vaccine* OR SARS-CoV-2 Vaccine* OR SARS CoV 2 Vaccine* OR SARS2 Vaccine* OR Coronavirus Disease 2019 Vaccine* OR Coronavirus Disease 2019 Virus Vaccine* OR Coronavirus Disease-19 Vaccine* OR 2019-nCoV Vaccine* OR 2019 Novel Coronavirus Vaccine* OR SARS Coronavirus 2 Vaccine*) OR AB(COVID 19 Vaccine* OR COVID-19 Vaccine* OR COVID-19 Virus Vaccine* OR COVID 19 Virus Vaccine* OR COVID19 Virus Vaccine* OR COVID19 Vaccine* OR SARS-CoV-2 Vaccine* OR SARS CoV 2 Vaccine* OR SARS2 Vaccine* OR Coronavirus Disease 2019 Vaccine* OR Coronavirus Disease 2019 Virus Vaccine* OR Coronavirus Disease-19 Vaccine* OR 2019-nCoV Vaccine* OR 2019 Novel Coronavirus Vaccine* OR SARS Coronavirus 2 Vaccine*))
	3	TI(Embolisms OR Embolus OR Gas Embolism* OR Air Embolism* OR Amniotic Fluid Embolism* OR Fat Embolism* OR Fat Embolism Syndrome OR Pulmonary Embolism* OR Pulmonary Thromboembolism* OR Pulmonary Infarct* OR Thromboembolisms OR Paradoxical Embolism* OR Crossed Embolism* OR Cerebral Embolism and Thrombosis OR Brain Embolism and Thrombosis OR Carotid Artery Thromboses OR Carotid Thrombosis OR External Carotid Artery Thrombosis OR Internal Carotid Artery Thrombosis OR Common Carotid Artery Thrombosis OR Intracranial Embolism OR Brain Embol* OR Cerebral Embol* OR Intracranial Thrombo* OR Intracranial Thrombus OR Cerebral Thrombus OR Cerebral Thrombo* OR Brain Thrombo* OR Brain Thrombus OR Intracranial Sinus Thrombo* OR Sinus Thrombos* OR Cranial Venous Sinus Thrombosis OR Cranial Sinus Thrombo* OR Petrous Sinus Thrombophlebiti* OR Petrous Sinus Thrombos* OR Intracranial Sinus Thrombophlebiti* OR

Database (Search time)	Search	Search String
		<p>Venous Thromboembolism OR Thromboses OR Thrombus OR Blood Clot* OR Coronary Thrombo* OR Phlebothrombos* OR Venous Thrombos* OR Deep Vein Thrombos* OR Deep Venous Thrombos*) OR AB(EMBOLISMS OR Embolus OR Gas Embolism* OR Air Embolism* OR Amniotic Fluid Embolism* OR Fat Embolism* OR Fat Embolism Syndrome OR Pulmonary Embolism* OR Pulmonary Thromboembolism* OR Pulmonary Infarct* OR Thromboembolisms OR Paradoxical Embolism* OR Crossed Embolism* OR Cerebral Embolism and Thrombosis OR Brain Embolism and Thrombosis OR Carotid Artery Thromboses OR Carotid Thrombosis OR External Carotid Artery Thrombosis OR Internal Carotid Artery Thrombosis OR Common Carotid Artery Thrombosis OR Intracranial Embolism OR Brain Embol* OR Cerebral Embol* OR Intracranial Thrombo* OR Intracranial Thrombus OR Cerebral Thrombus OR Cerebral Thrombo* OR Brain Thrombo* OR Brain Thrombus OR Intracranial Sinus Thrombo* OR Sinus Thrombos* OR Cranial Venous Sinus Thrombosis OR Cranial Sinus Thrombo* OR Petrous Sinus Thrombophlebiti* OR Petrous Sinus Thrombos* OR Intracranial Sinus Thrombophlebiti* OR Venous Thromboembolism OR Thromboses OR Thrombus OR Blood Clot* OR Coronary Thrombo* OR Phlebothrombos* OR Venous Thrombos* OR Deep Vein Thrombos* OR Deep Venous Thrombos*))</p>
	4	1 AND 2 AND 3

Supplementary data 2 Methodological quality of the included studies

References													
	11	12	13	14	15	20	16	17	18	21	19	22	
Appraisal questions													
CASE REPORTS													
1. Were patient's demographic characteristics clearly described?	✓	✓	✓		✓	✓	✓			✓	✓	✓	
2. Was the patient's history clearly described and presented as a timeline?	✓	✓	✓		✓	✓	✓			✗	✓	✓	
3. Was the current clinical condition of the patient on presentation clearly described?	✓	✓	✓		✓	✓	✓			✓	✓	✓	
4. Were diagnostic tests or assessment methods and the results clearly described?	✓	✓	✓		✗	✓	✓			✓	✓	✓	
5. Was the intervention(s) or treatment procedure(s) clearly described?	✓	✗	✗		✓	?	✓			✓	✓	✓	
6. Was the post-intervention clinical condition clearly described?	?	✗	✗		✗	✓	✓			✓	✓	✗	
7. Were adverse events (harms) or unanticipated events identified and described?	✓	✓	✓		N/A	✓	✓			✓	N/A	N/A	
8. Does the case report provide takeaway lessons?	✓	✓	✓		✓	✓	✓			✓	✓	✓	
CASE SERIES													
1. Were there clear criteria for inclusion in the case series?				✓				✓	✓				
2. Was the condition measured in a standard, reliable way for all participants included in the case series?				✓				✓	✓				
3. Were valid methods used for identification of the condition for all participants included in the case series?				✗				✓	✓				
4. Did the case series have consecutive inclusion of participants?				✗				✓	✓				
5. Did the case series have complete inclusion of participants?				✓				✓	✓				
6. Was there clear reporting of the demographics of the participants in the study?				✗				✓	N/A				
7. Was there clear reporting of clinical information of the participants?				✓				✓	✓				
8. Were the outcomes or follow-up results of cases clearly reported?				✓				✓	N/A				
9. Was there clear reporting of the presenting site(s)/clinic(s) demographic information?				✗				✓	✓				
10. Was statistical analysis appropriate?				✓				✓	✓				
Percentage of yes^a (%)	87.50	75.00	75.00	60.00	62.50	87.50	100.00	100.00	80.00	87.50	87.50	75.00	

“✓”: yes; “✗”: no; “?”: unclear; “N/A”: not applicable

^a the number of “yes” answers / (the number of questions in each study type) × 100