

Emerging Evidence Search Request

Please note: Our "Emerging Evidence" feature is based on the existing literature at the time the question is asked to provide the most informed answers possible to questions about COVID-19, and the science continues to evolve. As with any research, studies need to be replicated and there needs to be a strong body of evidence before any absolute conclusions can be made.

Questions about UHN policy or practice are best directed to the appropriate department (e.g. IPAC, Occupational Health).

Question:

"Is there a link between COVID 19 and coagulation and strokes?"

Additional Results from an Updated Search June 4, 2020

1.

Blood clots and TAM receptor signalling in COVID-19 pathogenesis.

Lemke G; Silverman GJ.

Nature Reviews. Immunology. 2020 Jun 02.

[Journal Article]

UI: 32488201

Version ID

1

Status

Publisher

Author NamelD

Lemke, Greg; ORCID: <u>http://orcid.org/0000-0001-5805-9855</u> Silverman, Gregg J; ORCID: <u>http://orcid.org/0000-0001-9480-9457</u>

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

2.

Thrombosis risk associated with COVID-19 infection. A scoping review.

Al-Ani F; Chehade S; Lazo-Langner A.

Thrombosis Research. 192:152-160, 2020 May 27.

[Journal Article]

UI: 32485418

BACKGROUND: Infection by the 2019 novel coronavirus (COVID-19) has been reportedly associated with a high risk of thrombotic complications. So far information is scarce and rapidly emerging.

METHODS: We conducted a scoping review using a single engine search for studies assessing thrombosis and coagulopathy in COVID-19 patients. Additional studies were identified by secondary review and alert services.

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RESULTS: Studies reported the occurrence of venous thromboembolism and stroke in approximately 20% and 3% of patients, respectively. A higher frequency seems to be present in severely ill patients, in particular those admitted to intensive care units. The thrombotic risk is elevated despite the use of anticoagulant prophylaxis but optimal doses of anticoagulation are not yet defined. Although an increase of biomarkers such as D-dimer has been consistently reported in severely ill COVID-19, the optimal cut-off level and prognostic value are not known.

DISCUSSION: A number of pressing issues were identified by this review, including defining the true incidence of VTE in COVID patients, developing algorithms to identify those susceptible to develop thrombotic complications and severe disease, determining the role of biomarkers and/or scoring systems to stratify patients' risk, designing adequate and feasible diagnostic protocols for PE, establishing the optimal thromboprophylaxis strategy, and developing uniform diagnostic and reporting criteria.

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Institution

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Year of Publication

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3.

High prevalence of deep vein thrombosis in mechanically ventilated COVID-19 patients.

Voicu S; Bonnin P; Stepanian A; Chousterman BG; Le Gall A; Malissin I; Deye N; Siguret V; Mebazaa A; Megarbane B.

Journal of the American College of Cardiology. 2020 May 29.

[Letter]

UI: 32479784

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1

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Authors Full Name

Voicu, Sebastian; Bonnin, Philippe; Stepanian, Alain; Chousterman, Benjamin G; Le Gall, Arthur; Malissin, Isabelle; Deye, Nicolas; Siguret, Virgine; Mebazaa, Alexandre; Megarbane, Bruno.

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Year of Publication

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4.

COVID-19-RELATED AORTIC THROMBOSIS: A REPORT OF FOUR CASES.

Gomez-Arbelaez D; Ibarra-Sanchez G; Garcia-Gutierrez A; Comanges-Yeboles A; Ansuategui-Vicente M; Gonzalez-Fajardo JA.

Annals of Vascular Surgery. 2020 May 28.

[Case Reports]

UI: 32474145

COVID-19 may predispose patients to an increased risk of thrombotic complications through various pathophysiological mechanisms. Most of the reports on a high incidence of thrombotic complications are in relation to deep vein thrombosis and pulmonary embolism, while the evidence about arterial thrombosis in patients with COVID-19 is limited. We describe four cases of aortic thrombosis and associated ischemic complications in patients with severe SARS-CoV-2 infection.

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Authors Full Name

Gomez-Arbelaez, Diego; Ibarra-Sanchez, Gabriela; Garcia-Gutierrez, Ania; Comanges-Yeboles, Alejandra; Ansuategui-Vicente, Marina; Gonzalez-Fajardo, Jose Antonio.

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Year of Publication

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5.

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Severe arterial thrombosis associated with Covid-19 infection.

Kashi M; Jacquin A; Dakhil B; Zaimi R; Mahe E; Tella E; Bagan P.

Thrombosis Research. 192:75-77, 2020 May 16.

[Letter]

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1

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6.

Neurological Manifestations of COVID-19: A systematic review and current update. [Review]

Whittaker A; Anson M; Harky A.

Acta Neurologica Scandinavica. 2020 May 15.

[Journal Article. Review]

UI: 32412088

The novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first identified in December of 2019 in the city of Wuhan, China. Since the outbreak, various reports detail its symptoms and outcomes, primarily focusing on respiratory complications. However, reports are emerging of the virus' effects systemically, including that of the nervous system. A review of all current published literature was conducted, and we report that headache and anosmia were common neurological manifestations of SARS-CoV-2. Less common symptoms include seizure, stroke and isolated cases of Guillain-Barre syndrome. Further research is now warranted to precisely determine the relationship between those patients developing neurological sequelae, their clinical state and any subsequent morbidity and mortality.

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Version ID 1 Status Publisher Author NameID Harky, Amer; ORCID: <u>https://orcid.org/0000-0001-5507-5841</u> Authors Full Name Whittaker, Abigail; Anson, Matthew; Harky, Amer. Institution

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Year of Publication

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Serial Solutions

7.

Incidence of asymptomatic deep vein thrombosis in patients with COVID-19 pneumonia and elevated D-dimer levels.

Demelo-Rodriguez P; Cervilla-Munoz E; Ordieres-Ortega L; Parra-Virto A; Toledano-Macias M; Toledo-Samaniego N; Garcia-Garcia A; Garcia-Fernandez-Bravo I; Ji Z; de-Miguel-Diez J; Alvarez-Sala-Walther LA; Del-Toro-Cervera J; Galeano-Valle F.

Thrombosis Research. 192:23-26, 2020 May 13.

[Journal Article]

UI: 32405101

AIM: An increased risk of venous thromboembolism (VTE) in patients with COVID-19 pneumonia admitted to intensive care unit (ICU) has been reported. Whether COVID-19 increases the risk of VTE in non-ICU wards remains unknown. We aimed to evaluate the burden of asymptomatic deep vein thrombosis (DVT) in COVID-19 patients with elevated D-dimer levels.

METHOD: In this prospective study consecutive patients hospitalized in non-intensive care units with diagnosis of COVID-19 pneumonia and D-dimer>1000ng/ml were screened for asymptomatic DVT with

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complete compression doppler ultrasound (CCUS). The study was approved by the Institutional Ethics Committee.

RESULTS: The study comprised 156 patients (65.4% male). All but three patients received standard doses of thromboprophylaxis. Median days of hospitalization until CCUS was 9 (IQR 5-17). CCUS was positive for DVT in 23 patients (14.7%), of whom only one was proximal DVT. Seven patients (4.5%) had bilateral distal DVT. Patients with DVT had higher median D-dimer levels: 4527 (IQR 1925-9144) ng/ml vs 2050 (IQR 1428-3235) ng/ml; p<0.001. D-dimer levels>1570ng/ml were associated with asymptomatic DVT (OR 9.1; Cl 95% 1.1-70.1). D-dimer showed an acceptable discriminative capacity (area under the ROC curve 0.72, 95% Cl 0.61-0.84).

CONCLUSION: In patients admitted with COVID-19 pneumonia and elevated D-dimer levels, the incidence of asymptomatic DVT is similar to that described in other series. Higher cut-off levels for D-dimer might be necessary for the diagnosis of DVT in COVID-19 patients.

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Demelo-Rodriguez, P; Cervilla-Munoz, E; Ordieres-Ortega, L; Parra-Virto, A; Toledano-Macias, M; Toledo-Samaniego, N; Garcia-Garcia, A; Garcia-Fernandez-Bravo, I; Ji, Z; de-Miguel-Diez, J; Alvarez-Sala-Walther, L A; Del-Toro-Cervera, J; Galeano-Valle, F.

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Year of Publication

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Link to UHN Full Text:

Serial Solutions

8.

Impact of the COVID-19 outbreak on acute stroke pathways - insights from the Alsace region in France.

Pop R; Quenardelle V; Hasiu A; Mihoc D; Sellal F; Dugay MH; Lebedinsky PA; Schluck E; LA Porta A; Courtois S; Gheoca R; Wolff V; Beaujeux R.

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European Journal of Neurology. 2020 May 12.

[Journal Article]

UI: 32399995

BACKGROUND AND PURPOSE: To date, no study has attempted to quantify the impact of the COVID-19 outbreak on the incidence and treatment of acute stroke.

METHODS: This was a retrospective review of acute stroke pathway parameters in all three stroke units in the Alsace region during the first month of the outbreak (1-31 March 2020), using the similar period from 2019 as a comparator. A secondary detailed analysis of all stroke alerts and stroke unit admissions was performed in the centre with the largest case volume.

RESULTS: Compared to the same period in 2019, in March 2020 there were 39.6% fewer stroke alerts and 33.3% fewer acute revascularization treatments [40.9% less intravenous thrombolysis (IVT) and 27.6% less mechanical thrombectomy (MT)]. No marked variation was observed in the number of stroke unit admissions (-0.6%). The proportion of patients with acute revascularization treatments (IVT or MT) out of the total number of stroke unit admissions was significantly lower in March 2020 (21.3%) compared to 2019 (31.8%), P = 0.034. There were no significant differences in time delays or severity of clinical symptoms for patients treated by IVT or MT, nor in the distribution of final diagnosis amongst stroke alerts and stroke unit admissions.

CONCLUSION: These results suggest that the overall incidence of stroke remained the same, but fewer patients presented within the therapeutic time window. Increased public awareness and corrective measures are needed to mitigate the deleterious effects of the COVID-19 outbreak on acute stroke care.

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Authors Full Name

Pop, R; Quenardelle, V; Hasiu, A; Mihoc, D; Sellal, F; Dugay, M H; Lebedinsky, P A; Schluck, E; LA Porta, A; Courtois, S; Gheoca, R; Wolff, V; Beaujeux, R.

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Year of Publication

2020

Link to UHN Full Text:

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9.

Abdominal Aortic Thrombosis Complicating COVID-19 Pneumonia.

Roncati L; Manenti A; Manco G; Farinetti A.

Library staff make every effort to provide accurate and complete database search results. However, we assume no liability for information retrieved, its interpretation, applications or omissions. Page **13** of

Annals of Vascular Surgery. 2020 May 27. [Letter] UI: 32473304 Version ID 1 Status Publisher Authors Full Name Roncati, Luca; Manenti, Antonio; Manco, Gianrocco; Farinetti, Alberto. Institution Roncati, Luca. Departments of Pathology. Manenti, Antonio. Departments of Surgery, University Hospital of Modena. Electronic address: antonio.manenti@unimore.it. Manco, Gianrocco. Departments of Surgery, University Hospital of Modena. Farinetti, Alberto. Departments of Surgery, University Hospital of Modena. Year of Publication 2020

Link to UHN Full Text:

Serial Solutions

10.

Underutilization of Healthcare for strokes during the COVID-19 outbreak.

Onteddu SR; Nalleballe K; Sharma R; Brown AT.

International Journal of Stroke. 1747493020934362, 2020 Jun 01.

Library staff make every effort to provide accurate and complete database search results. However, we assume no liability for information retrieved, its interpretation, applications or omissions. Page 14 of

[Journal Article]

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Authors Full Name

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Year of Publication

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Link to UHN Full Text:

Serial Solutions

11.

The neurology of COVID-19 revisited: A proposal from the Environmental Neurology Specialty Group of the World Federation of Neurology to implement international neurological registries. [Review]

Roman GC; Spencer PS; Reis J; Buguet A; Faris MEA; Katrak SM; Lainez M; Medina MT; Meshram C; Mizusawa H; Ozturk S; Wasay M; WFN Environmental Neurology Specialty Group.

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Journal of the Neurological Sciences. 414:116884, 2020 May 07.

[Journal Article. Review]

UI: 32464367

A comprehensive review of the neurological disorders reported during the current COVID-19 pandemic demonstrates that infection with SARS-CoV-2 affects the central nervous system (CNS), the peripheral nervous system (PNS) and the muscle. CNS manifestations include: headache and decreased responsiveness considered initial indicators of potential neurological involvement; anosmia, hyposmia, hypogeusia, and dysgeusia are frequent early symptoms of coronavirus infection. Respiratory failure, the lethal manifestation of COVID-19, responsible for 264,679 deaths worldwide, is probably neurogenic in origin and may result from the viral invasion of cranial nerve I, progressing into rhinencephalon and brainstem respiratory centers. Cerebrovascular disease, in particular large-vessel ischemic strokes, and less frequently cerebral venous thrombosis, intracerebral hemorrhage and subarachnoid hemorrhage, usually occur as part of a thrombotic state induced by viral attachment to ACE2 receptors in endothelium causing widespread endotheliitis, coagulopathy, arterial and venous thromboses. Acute hemorrhagic necrotizing encephalopathy is associated to the cytokine storm. A frontal hypoperfusion syndrome has been identified. There are isolated reports of seizures, encephalopathy, meningitis, encephalitis, and myelitis. The neurological diseases affecting the PNS and muscle in COVID-19 are less frequent and include Guillain-Barre syndrome; Miller Fisher syndrome; polyneuritis cranialis; and rare instances of viral myopathy with rhabdomyolysis. The main conclusion of this review is the pressing need to define the neurology of COVID-19, its frequency, manifestations, neuropathology and pathogenesis. On behalf of the World Federation of Neurology we invite national and regional neurological associations to create local databases to report cases with neurological manifestations observed during the on-going pandemic. International neuroepidemiological collaboration may help define the natural history of this worldwide problem.

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Roman, Gustavo C; Spencer, Peter S; Reis, Jacques; Buguet, Alain; Faris, Mostafa El Alaoui; Katrak, Sarosh M; Lainez, Miguel; Medina, Marco Tulio; Meshram, Chandrashekhar; Mizusawa, Hidehiro; Ozturk, Serefnur; Wasay, Mohammad; WFN Environmental Neurology Specialty Group.

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COVID-19 related neuroimaging findings: A signal of thromboembolic complications and a strong prognostic marker of poor patient outcome.

Jain R; Young M; Dogra S; Kennedy H; Nguyen V; Jones S; Bilaloglu S; Hochman K; Raz E; Galetta S; Horwtiz L.

Journal of the Neurological Sciences. 414:116923, 2020 May 19.

[Journal Article]

UI: 32447193

OBJECTIVE: To investigate the incidence and spectrum of neuroimaging findings and their prognostic role in hospitalized COVID-19 patients in New York City.

METHODS: This is a retrospective cohort study of 3218 COVID-19 confirmed patients admitted to a major healthcare system (three hospitals) in New York City between March 1, 2020 and April 13, 2020. Clinical data were extracted from electronic medical records, and particularly data of all neurological symptoms were extracted from the imaging reports. Four neuroradiologists evaluated all neuroimaging studies for acute neuroimaging findings related to COVID-19.

RESULTS: 14.1% of admitted COVID-19 patients had neuroimaging and this accounted for only 5.5% of the total imaging studies. Acute stroke was the most common finding on neuro-imaging, seen in 92.5% of patients with positive neuro-imaging studies, and present in 1.1% of hospitalized COVID-19 patients. Patients with acute large ischemic and hemorrhagic stroke had much higher mortality risk adjusted for age, BMI and hypertension compared to those COVID-19 patients without neuroimaging. (Odds Ratio 6.02 by LR; Hazard Ratio 2.28 by CRR).

CONCLUSIONS: Our study demonstrates acute stroke is the most common neuroimaging finding among hospitalized COVID-19 patients. Detection of an acute stroke is a strong prognostic marker of poor outcome. Our study also highlights the fact there is limited use of neuroimaging in these patients due to multiple logistical constraints.

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12.

Jain, Rajan; Young, Matthew; Dogra, Siddhant; Kennedy, Helena; Nguyen, Vinh; Jones, Simon; Bilaloglu, Seda; Hochman, Katherine; Raz, Eytan; Galetta, Steven; Horwtiz, Leora.

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13.

Has COVID-19 played an unexpected "stroke" on the chain of survival?.

Naccarato M; Scali I; Olivo S; Ajcevic M; Buoite Stella A; Furlanis G; Lugnan C; Caruso P; Peratoner A; Cominotto F; Manganotti P.

Journal of the Neurological Sciences. 414:116889, 2020 May 06.

[Journal Article]

UI: 32416370

BACKGROUND: The COVID-19 pandemics required several changes in stroke management and it may have influenced some clinical or functional characteristics. We aimed to evaluate the effects of the COVID-19 pandemics on stroke management during the first month of Italy lockdown. In addition, we described the emergency structured pathway adopted by an Italian University Hub Stroke Unit in the cross-border Italy-Slovenia area.

METHODS: We analyzed admitted patients' clinical features and outcomes between 9th March 2020 and 9th April 2020 (first month of lockdown), and compared them with patients admitted during the same period in 2019.

RESULTS: Total admissions experienced a reduction of 45% during the lockdown compared to the same period in 2019 (16 vs 29, respectively), as well as a higher prevalence of severe stroke (NIHSS>10) at admission (n = 8, 50% vs n = 8, 28%). A dramatic prevalence of stroke of unknown symptom onset was observed in 2020 (n = 8, 50% vs n = 3, 10%). During lockdown, worse functional and independence outcomes were found, despite the similar proportion of reperfused patients. Similar 'symptoms alert-to-admission' and 'door-to-treatment' times were observed. During lockdown hospitalization was shorter and fewer patients completed the stroke work-up.

CONCLUSION: In conclusion, the adopted strategies for stroke management during the COVID-19 emergency have suggested being effective, while suffering a reduced and delayed reporting of symptoms. Therefore, we recommend raising awareness among the population against possible stroke symptoms onset. Thus, think F.A.S.T. and do not stay-at-home at all costs.

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Authors Full Name

Naccarato, Marcello; Scali, Ilario; Olivo, Sasha; Ajcevic, Milos; Buoite Stella, Alex; Furlanis, Giovanni; Lugnan, Carlo; Caruso, Paola; Peratoner, Alberto; Cominotto, Franco; Manganotti, Paolo.

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Year of Publication

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14.

Acute Stroke Care Is at Risk in the Era of COVID-19: Experience at a Comprehensive Stroke Center in Barcelona.

Rudilosso S; Laredo C; Vera V; Vargas M; Renu A; Llull L; Obach V; Amaro S; Urra X; Torres F; Jimenez-Fabrega FX; Chamorro A.

Stroke. STROKEAHA120030329, 2020 May 22.

[Journal Article]

UI: 32438895

BACKGROUND AND PURPOSE: The purpose of the study is to analyze how the coronavirus disease 2019 (COVID-19) pandemic affected acute stroke care in a Comprehensive Stroke Center.

METHODS: On February 28, 2020, contingency plans were implemented at Hospital Clinic of Barcelona to contain the COVID-19 pandemic. Among them, the decision to refrain from reallocating the Stroke Team and Stroke Unit to the care of patients with COVID-19. From March 1 to March 31, 2020, we measured the number of emergency calls to the Emergency Medical System in Catalonia (7.5 million inhabitants), and the Stroke Codes dispatched to Hospital Clinic of Barcelona. We recorded all stroke admissions, and the adequacy of acute care measures, including the number of thrombectomies, workflow metrics, angiographic results, and clinical outcomes. Data were compared with March 2019 using parametric or nonparametric methods as appropriate.

RESULTS: At Hospital Clinic of Barcelona, 1232 patients with COVID-19 were admitted in March 2020, demanding 60% of the hospital bed capacity. Relative to March 2019, the Emergency Medical System had a 330% mean increment in the number of calls (158 005 versus 679 569), but fewer Stroke Code activations (517 versus 426). Stroke admissions (108 versus 83) and the number of thrombectomies (21 versus 16) declined at Hospital Clinic of Barcelona, particularly after lockdown of the population.

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Younger age was found in stroke admissions during the pandemic (median [interquartile range] 69 [64-73] versus 75 [73-80] years, P=0.009). In-hospital, there were no differences in workflow metrics, angiographic results, complications, or outcomes at discharge.

CONCLUSIONS: The COVID-19 pandemic reduced by a quarter the stroke admissions and thrombectomies performed at a Comprehensive Stroke Center but did not affect the quality of care metrics. During the lockdown, there was an overload of emergency calls but fewer Stroke Code activations, particularly in elderly patients. Hospital contingency plans, patient transport systems, and population-targeted alerts must act concertedly to better protect the chain of stroke care in times of pandemic.

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1

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Authors Full Name

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15.

Delays in Stroke Onset to Hospital Arrival Time During COVID-19.

Teo KC; Leung WCY; Wong YK; Liu RKC; Chan AHY; Choi OMY; Kwok WM; Leung KK; Tse MY; Cheung RTF; Tsang AC; Lau KK.

Stroke. STROKEAHA120030105, 2020 May 20.

[Journal Article]

Library staff make every effort to provide accurate and complete database search results. However, we assume no liability for information retrieved, its interpretation, applications or omissions. Page 24 of

UI: 32432998

BACKGROUND AND PURPOSE: The current coronavirus disease 2019 (COVID-19) pandemic represents a global public health crisis, disrupting emergency healthcare services. We determined whether COVID-19 has resulted in delays in stroke presentation and affected the delivery of acute stroke services in a comprehensive stroke center in Hong Kong.

METHODS: We retrospectively reviewed all patients with transient ischemic attack and stroke admitted via the acute stroke pathway of Queen Mary Hospital, Hong Kong, during the first 60 days since the first diagnosed COVID-19 case in Hong Kong (COVID-19: January 23, 2020-March 24, 2020). We compared the stroke onset to hospital arrival (onset-to-door) time and timings of inpatient stroke pathways with patients admitted during the same period in 2019 (pre-COVID-19: January 23, 2019-March 24, 2019).

RESULTS: Seventy-three patients in COVID-19 were compared with 89 patients in pre-COVID-19. There were no significant differences in age, sex, vascular risk factors, nor stroke severity between the 2 groups (P>0.05). The median stroke onset-to-door time was =1-hour longer in COVID-19 compared with pre-COVID-19 (154 versus 95 minutes, P=0.12), and the proportion of individuals with onset-to-door time within 4.5 hours was significantly lower (55% versus 72%, P=0.024). Significantly fewer cases of transient ischemic attack presented to the hospital during COVID-19 (4% versus 16%, P=0.016), despite no increase in referrals to the transient ischemic attack clinic. Inpatient stroke pathways and treatment time metrics nevertheless did not differ between the 2 groups (P>0.05 for all comparisons).

CONCLUSIONS: During the early containment phase of COVID-19, we noted a prolongation in stroke onset to hospital arrival time and a significant reduction in individuals arriving at the hospital within 4.5 hours and presenting with transient ischemic attack. Public education about stroke should continue to be reinforced during the COVID-19 pandemic.

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1

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Authors Full Name

Teo, Kay-Cheong; Leung, William C Y; Wong, Yuen-Kwun; Liu, Roxanna K C; Chan, Anna H Y; Choi, Olivia M Y; Kwok, Wing-Man; Leung, Kung-Ki; Tse, Man-Yu; Cheung, Raymond T F; Tsang, Anderson Chun-On; Lau, Kui Kai.

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16.

Impact of the COVID-19 Epidemic on Stroke Care and Potential Solutions.

Zhao J; Li H; Kung D; Fisher M; Shen Y; Liu R.

Stroke. STROKEAHA120030225, 2020 May 20.

[Journal Article]

UI: 32432997

Background and Purpose - When the coronavirus disease 2019 (COVID-19) outbreak became paramount, medical care for other devastating diseases was negatively impacted. In this study, we investigated the impact of the COVID-19 outbreak on stroke care across China. Methods- Data from the Big Data Observatory Platform for Stroke of China consisting of 280 hospitals across China demonstrated a significant drop in the number of cases of thrombolysis and thrombectomy. We designed a survey to investigate the major changes during the COVID-19 outbreak and potential causes of these changes. The survey was distributed to the leaders of stroke centers in these 280 hospitals. Results - From the data of Big Data Observatory Platform for Stroke of China, the total number of thrombolysis and thrombectomy cases dropped 26.7% (P<0.0001) and 25.3% (P<0.0001), respectively, in February 2020 as compared with February 2019. We retrieved 227 valid complete datasets from the 280 stroke centers. Nearly 50% of these hospitals were designated hospitals for COVID-19. The capacity for stroke care was reduced in the majority of the hospitals. Most of the stroke centers stopped or reduced their efforts in stroke education for the public. Hospital admissions related to stroke dropped =40%; thrombolysis and thrombectomy cases dropped =25%, which is similar to the results from the Big Data Observatory Platform for Stroke of China as compared with the same period in 2019. Many factors contributed to the reduced admissions and prehospital delays; lack of stroke knowledge and proper transportation were significant limiting factors. Patients not coming to the hospital for fear of virus infection was also a likely key factor. Conclusions - The COVID-19 outbreak impacted stroke care significantly in China, including prehospital and in-hospital care, resulting in a significant drop in admissions, thrombolysis, and thrombectomy. Although many factors contributed, patients not coming to the hospital was probably the major limiting factor. Recommendations based on the data are provided.

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Zhao, Jing; Li, Hang; Kung, David; Fisher, Marc; Shen, Ying; Liu, Renyu.

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Year of Publication

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17.

SARS2-CoV-2 and Stroke in a New York Healthcare System.

Yaghi S; Ishida K; Torres J; Mac Grory B; Raz E; Humbert K; Henninger N; Trivedi T; Lillemoe K; Alam S; Sanger M; Kim S; Scher E; Dehkharghani S; Wachs M; Tanweer O; Volpicelli F; Bosworth B; Lord A; Frontera J.

Stroke. STROKEAHA120030335, 2020 May 20.

[Journal Article]

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UI: 32432996

BACKGROUND AND PURPOSE: With the spread of coronavirus disease 2019 (COVID-19) during the current worldwide pandemic, there is mounting evidence that patients affected by the illness may develop clinically significant coagulopathy with thromboembolic complications including ischemic stroke. However, there is limited data on the clinical characteristics, stroke mechanism, and outcomes of patients who have a stroke and COVID-19.

METHODS: We conducted a retrospective cohort study of consecutive patients with ischemic stroke who were hospitalized between March 15, 2020, and April 19, 2020, within a major health system in New York, the current global epicenter of the pandemic. We compared the clinical characteristics of stroke patients with a concurrent diagnosis of COVID-19 to stroke patients without COVID-19 (contemporary controls). In addition, we compared patients to a historical cohort of patients with ischemic stroke discharged from our hospital system between March 15, 2019, and April 15, 2019 (historical controls).

RESULTS: During the study period in 2020, out of 3556 hospitalized patients with diagnosis of COVID-19 infection, 32 patients (0.9%) had imaging proven ischemic stroke. Cryptogenic stroke was more common in patients with COVID-19 (65.6%) as compared to contemporary controls (30.4%, P=0.003) and historical controls (25.0%, P<0.001). When compared with contemporary controls, COVID-19 positive patients had higher admission National Institutes of Health Stroke Scale score and higher peak D-dimer levels. When compared with historical controls, COVID-19 positive patients were more likely to be younger men with elevated troponin, higher admission National Institutes of Health Stroke Scale score, and higher erythrocyte sedimentation rate. Patients with COVID-19 and stroke had significantly higher mortality than historical and contemporary controls.

CONCLUSIONS: We observed a low rate of imaging-confirmed ischemic stroke in hospitalized patients with COVID-19. Most strokes were cryptogenic, possibly related to an acquired hypercoagulability, and mortality was increased. Studies are needed to determine the utility of therapeutic anticoagulation for stroke and other thrombotic event prevention in patients with COVID-19.

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1

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Authors Full Name

Yaghi, Shadi; Ishida, Koto; Torres, Jose; Mac Grory, Brian; Raz, Eytan; Humbert, Kelley; Henninger, Nils; Trivedi, Tushar; Lillemoe, Kaitlyn; Alam, Shazia; Sanger, Matthew; Kim, Sun; Scher, Erica; Dehkharghani, Seena; Wachs, Michael; Tanweer, Omar; Volpicelli, Frank; Bosworth, Brian; Lord, Aaron; Frontera, Jennifer.

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18.

Early Lessons From World War COVID: Reinventing Our Stroke Systems of Care.

Sheth SA; Wu TC; Sharrief A; Ankrom C; Grotta JC; Fisher M; Savitz SI.

Stroke. STROKEAHA120030154, 2020 May 18.

[Journal Article]

UI: 32421392

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Publisher

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

19.

Is COVID Evolution Due to Occurrence of Pulmonary Vascular Thrombosis?.

Saba L; Sverzellati N.

Journal of Thoracic Imaging. 2020 Apr 28.

[Journal Article]

UI: 32349055

In this hypothesis paper, we suggest that severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) may induce intravascular pulmonary thrombosis, which may result in the rapid worsening of clinical conditions and, eventually, exitus. Previously published papers have demonstrated that increased levels of D-dimer at hospital admission correlate with a more severe disease (0.5 mg/L) or occurrence of death (1 mg/L). The potential prothrombotic action of the SARS-CoV-2 is supported by the topographical involvement of the lung regions with a predilection for the lower lobe with peripheral involvement. If this hypothesis is demonstrated, this could suggest the benefit of using antithrombotic/coagulation

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regimens for SARS-CoV-2 and, at the same time, the urgency to identify drugs that could alter the inflammatory storm, thus protecting the vessel wall.

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1

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Authors Full Name

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Institution

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

20.

Delayed presentation of acute ischemic strokes during the COVID-19 crisis.

Schirmer CM; Ringer AJ; Arthur AS; Binning MJ; Fox WC; James RF; Levitt MR; Tawk RG; Veznedaroglu E; Walker M; Spiotta AM; Endovascular Research Group (ENRG).

Journal of Neurointerventional Surgery. 2020 May 28.

[Journal Article]

UI: 32467244

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BACKGROUND: The COVID-19 pandemic has disrupted established care paths worldwide. Patient awareness of the pandemic and executive limitations imposed on public life have changed the perception of when to seek care for acute conditions in some cases. We sought to study whether there is a delay in presentation for acute ischemic stroke patients in the first month of the pandemic in the US.

METHODS: The interval between last-known-well (LKW) time and presentation of 710 consecutive patients presenting with acute ischemic strokes to 12 stroke centers across the US were extracted from a prospectively maintained quality database. We analyzed the timing and severity of the presentation in the baseline period from February to March 2019 and compared results with the timeframe of February and March 2020.

RESULTS: There were 320 patients in the 2-month baseline period in 2019, there was a marked decrease in patients from February to March of 2020 (227 patients in February, and 163 patients in March). There was no difference in the severity of the presentation between groups and no difference in age between the baseline and the COVID period. The mean interval from LKW to the presentation was significantly longer in the COVID period (603+/-1035 min) compared with the baseline period (442+/-435 min, P<0.02).

CONCLUSION: We present data supporting an association between public awareness and limitations imposed on public life during the COVID-19 pandemic in the US and a delay in presentation for acute ischemic stroke patients to a stroke center.

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1

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Serial Solutions

21.

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Break in the Stroke Chain of Survival Due to COVID-19.

Montaner J; Barragan-Prieto A; Perez-Sanchez S; Escudero-Martinez I; Moniche F; Sanchez-Miura JA; Ruiz-Bayo L; Gonzalez A.

Stroke. STROKEAHA120030106, 2020 May 29.

[Journal Article]

UI: 32466738

BACKGROUND AND PURPOSE: Emergency measures to treat patients with coronavirus 2019 (COVID-19) and contain the outbreak is the main priority in each of our hospitals; however, these measures are likely to result in collateral damage among patients with other acute diseases. Here, we investigate whether the COVID-19 pandemic affects acute stroke care through interruptions in the stroke chain of survival.

METHODS: A descriptive analysis of acute stroke care activity before and after the COVID-19 outbreak is given for a stroke network in southern Europe. To quantify the impact of the pandemic, the number of stroke code activations, ambulance transfers, consultations through telestroke, stroke unit admissions, and reperfusion therapy times and rates are described in temporal relationship with the rising number of COVID-19 cases in the region.

RESULTS: Following confinement of the population, our stroke unit activity decreased sharply, with a 25% reduction in admitted cases (mean number of 58 cases every 15 days in previous months to 44 cases in the 15 days after the outbreak, P<0.001). Consultations to the telestroke network declined from 25 every 15 days before the outbreak to 7 after the outbreak (P<0.001). The increasing trend in the prehospital diagnosis of stroke activated by 911 calls stopped abruptly in the region, regressing to 2019 levels. The mean number of stroke codes dispatched to hospitals decreased (78% versus 57%, P<0.001). Time of arrival from symptoms onset to stroke units was delayed >30 minutes, reperfusion therapy cases fell, and door-to-needle time started 16 minutes later than usual.

CONCLUSIONS: The COVID-19 pandemic is disruptive for acute stroke pathways. Bottlenecks in the access and delivery of patients to our secured stroke centers are among the main challenges. It is critical to encourage patients to continue seeking emergency care if experiencing acute stroke symptoms and to ensure that emergency professionals continue to use stroke code activation and telestroke networks.

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Montaner, Joan; Barragan-Prieto, Ana; Perez-Sanchez, Soledad; Escudero-Martinez, Irene; Moniche, Francisco; Sanchez-Miura, Jose Antonio; Ruiz-Bayo, Lidia; Gonzalez, Alejandro.

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Year of Publication

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Serial Solutions

Treatment of Acute Ischemic Stroke due to Large Vessel Occlusion With COVID-19: Experience From Paris.

Escalard S; Maier B; Redjem H; Delvoye F; Hebert S; Smajda S; Ciccio G; Desilles JP; Mazighi M; Blanc R; Piotin M.

Stroke. STROKEAHA120030574, 2020 May 29.

[Journal Article]

UI: 32466736

BACKGROUND AND PURPOSE: Higher rates of strokes have been observed in patients with coronavirus disease 2019 (COVID-19), but data regarding the outcomes of COVID-19 patients suffering from acute ischemic stroke due to large vessel occlusion (LVO) are lacking. We report our initial experience in the treatment of acute ischemic stroke with LVO in patients with COVID-19.

METHODS: All consecutive patients with COVID-19 with acute ischemic stroke due to LVO treated in our institution during the 6 first weeks of the COVID-19 outbreak were included. Baseline clinical and radiological findings, treatment, and short-term outcomes are reported.

RESULTS: We identified 10 patients with confirmed COVID-19 treated for an acute ischemic stroke due to LVO. Eight were men, with a median age of 59.5 years. Seven had none or mild symptoms of COVID-19 at stroke onset. Median time from COVID-19 symptoms to stroke onset was 6 days. All patients had brain imaging within 3 hours from symptoms onset. Five patients had multi-territory LVO. Five received intravenous alteplase. All patients had mechanical thrombectomy. Nine patients achieved successful recanalization (mTICI2B-3), none experienced early neurological improvement, 4 had early cerebral reocclusion, and a total of 6 patients (60%) died in the hospital.

CONCLUSIONS: Best medical care including early intravenous thrombolysis, and successful and prompt recanalization achieved with mechanical thrombectomy, resulted in poor outcomes in patients with COVID-19. Although our results require further confirmation, a different pharmacological approach (antiplatelet or other) should be investigated to take in account inflammatory and coagulation disorders associated with COVID-19.

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22.

Escalard, Simon; Maier, Benjamin; Redjem, Hocine; Delvoye, Francois; Hebert, Solene; Smajda, Stanislas; Ciccio, Gabriele; Desilles, Jean-Philippe; Mazighi, Mikael; Blanc, Raphael; Piotin, Michel.

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23.

Clinical Characteristics and Outcomes of COVID-19 Patients With a History of Stroke in Wuhan, China.

Qin C; Zhou L; Hu Z; Yang S; Zhang S; Chen M; Yu H; Tian DS; Wang W.

Stroke. STROKEAHA120030365, 2020 May 29.

[Journal Article]

UI: 32466735

BACKGROUND AND PURPOSE: Information on stroke survivors infected with coronavirus disease 2019 (COVID-19) is limited. The aim of this study was to describe specific clinical characteristics and outcomes of patients with COVID-19 with a history of stroke.

METHODS: All the confirmed cases of COVID-19 at Tongji Hospital from January 27 to March 5, 2020, were included in our cohort study. Clinical data were analyzed and compared between patients with and without a history of stroke.

RESULTS: Of the included 1875 patients with COVID-19, 50 patients had a history of stroke. The COVID-19 patients with medical history of stroke were older with more comorbidities, had higher neutrophil count, and lower lymphocyte and platelet counts than those without history of stroke. The levels of Ddimers, cardiac troponin I, NT pro-brain natriuretic peptide, and interleukin-6 were also markedly higher in patients with history of stroke. Stroke survivors who underwent COVID-19 developed more acute respiratory distress syndrome and received more noninvasive mechanical ventilation. Data from propensity-matched analysis indicated a higher proportion of patients with COVD-19 with a history of stroke were admitted to the intensive care unit requiring mechanical ventilation and were more likely to be held in the unit or die, compared with non-stroke history COVID-19 patients.

CONCLUSIONS: Patients with COVID-19 with a history of stroke had more severe clinical symptoms and poorer outcomes compared with those without a history of stroke.

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1

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Authors Full Name

Qin, Chuan; Zhou, Luoqi; Hu, Ziwei; Yang, Sheng; Zhang, Shuoqi; Chen, Man; Yu, Haihan; Tian, Dai-Shi; Wang, Wei.

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24.

Macrothrombosis and stroke in patients with mild Covid-19 infection.

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Fara MG; Stein LK; Skliut M; Morgello S; Fifi JT; Dhamoon MS.

Journal of Thrombosis & Haemostasis. 2020 May 28.

[Case Reports]

UI: 32464707

Coronavirus disease 2019 (COVID-19) is a pandemic disease currently affecting millions of people worldwide. Its neurological implications are poorly understood, and further study is urgently required. A hypercoagulable state has been reported in patients with severe COVID-19, but nothing is known about coagulopathy in patients with milder disease. We describe cases of patients in New York City presenting with stroke secondary to large vessel thrombosis without occlusion, incidentally found to have COVID-19 with only mild respiratory symptoms. This is in contrast to the venous thrombosis and microangiopathy that has been reported in patients with severe COVID-19. Our cases suggest that even in the absence of severe disease, patients with COVID-19 may be at increased risk of thrombus formation leading to stroke, perhaps due to viral involvement of the endothelium. Further systematic study is needed, since this may have implications for primary and secondary stroke prevention in patients with COVID-19.

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Authors Full Name

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Year of Publication

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25.

Characteristics of ischaemic stroke associated with COVID-19.

Beyrouti R; Adams ME; Benjamin L; Cohen H; Farmer SF; Goh YY; Humphries F; Jager HR; Losseff NA; Perry RJ; Shah S; Simister RJ; Turner D; Chandratheva A; Werring DJ.

Journal of Neurology, Neurosurgery & Psychiatry. 2020 Apr 30.

[Letter]

UI: 32354768

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26.

Preventing stroke in symptomatic carotid artery disease during the COVID-19 pandemic.

Hellegering J; van der Laan MJ; Heide EJ; Uyttenboogaart M; Zeebregts CJ; Bokkers RPH.

Journal of Vascular Surgery. 2020 May 21.

[Letter]

UI: 32448560

Version ID

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Authors Full Name

Hellegering, Joyce; van der Laan, Maarten J; Heide, Erik-Jan de; Uyttenboogaart, Maarten; Zeebregts, Clark J; Bokkers, Reinoud P H.

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Year of Publication

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Serial Solutions

27.

Intra-arterial thrombosis associated with COVID-19.

Hamilton KV; Hussey KK.

Journal of Vascular Surgery. 2020 May 17.

[Letter]

UI: 32425325

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Authors Full Name

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

28.

Neurological manifestations of COVID-19 and other coronavirus infections: A systematic review. [Review]

Montalvan V; Lee J; Bueso T; De Toledo J; Rivas K.

Clinical Neurology & Neurosurgery. 194:105921, 2020 May 15.

[Journal Article. Review]

UI: 32422545

BACKGROUND: Increasing research reports neurological manifestations of COVID-19 patients. SARS-CoV-2 shares homology with other human coronaviruses that have also had nervous system involvement.

OBJECTIVE: To review the neurological aspects of SARS-cov2 and other coronavirus, including transmission pathways, mechanisms of invasion into the nervous system, and mechanisms of neurological disease.

METHODS: We conducted a systematic review of articles in PubMed, SCOPUS and EMBASE data bases. Reviewed evidence is presented in sections of this manuscript which includes pathogenesis, neuro-

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invasion, encephalitis, Guillain-Barre, ADEM, multiple sclerosis, polyneuropathy, and cerebrovascular disease.

RESULTS: A total 67 studies were included in the final analysis of experimental studies, case reports, series of cases, cohort studies, and systematic reviews related to neurological manifestations of SARS-CoV-2 and other human coronavirus infections. The SARS-CoV-2 receptor is expressed in the nervous system. Common reported symptoms included hyposmia, headaches, weakness, altered consciousness. Encephalitis, demyelination, neuropathy, and stroke have been associated with COVID-19. Infection through the cribriform plate and olfactory bulb and dissemination through trans-synaptic transfer are some of the mechanisms proposed. Invasion of the medullary cardiorespiratory center by SARS-CoV-2 may contribute to the refractory respiratory failure observed in critically-ill COVID-19 patients.

CONCLUSION: An increasing number of reports of COVID-19 patients with neurological disorders add to emergent experimental models with neuro-invasion as a reasonable concern that SARS-CoV-2 is a new neuropathogen. How it may cause acute and chronic neurologic disorders needs to be clarified in future research.

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Year of Publication

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Link to UHN Full Text:

Serial Solutions

29.

Stroke in COVID-19 and SARS-CoV-1.

Venketasubramanian N; Hennerici MG.

Cerebrovascular Diseases. 1-2, 2020 May 26.

[Editorial]

UI: 32454503

Version ID

1

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Year of Publication

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Serial Solutions

30.

Acute Cerebral Stroke with Multiple Infarctions and COVID-19, France, 2020.

Zayet S; Klopfenstein T; Kovacs R; Stancescu S; Hagenkotter B.

Emerging Infectious Diseases. 26(9), 2020 May 26.

[Journal Article]

UI: 32453685

We describe 2 cases in coronavirus disease patients in France involving presumed thrombotic stroke that occurred during ongoing anticoagulation treatment for atrial fibrillation stroke prophylaxis; 1 patient had positive antiphospholipid antibodies. These cases highlight the severe and unique consequences of coronavirus disease-associated stroke.

Version ID

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Authors Full Name

Zayet, Souheil; Klopfenstein, Timothee; Kovacs, Robert; Stancescu, Silviu; Hagenkotter, Beate.

Year of Publication

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Serial Solutions

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31.

Ischaemic stroke and SARS-CoV-2 infection: A causal or incidental association?. Ictus isquemico e infeccion por SARS-CoV-2, asociacion casual o causal?

Barrios-Lopez JM; Rego-Garcia I; Munoz Martinez C; Romero-Fabrega JC; Rivero Rodriguez M; Ruiz Gimenez JA; Escamilla-Sevilla F; Minguez-Castellanos A; Fernandez Perez MD.

Neurologia. 2020 May 11.

[Journal Article]

UI: 32448674

INTRODUCTION: Ischaemic stroke has been reported in patients with COVID-19, particularly in more severe cases. However, it is unclear to what extent this is linked to systemic inflammation and hypercoagulability secondary to the infection.

METHODS: We describe the cases of 4 patients with ischaemic stroke and COVID-19 who were attended at our hospital. Patients are classified according to the likelihood of a causal relationship between the hypercoagulable state and ischaemic stroke. We also conducted a review of studies addressing the possible mechanisms involved in the aetiopathogenesis of ischaemic stroke in these patients.

RESULTS: The association between COVID-19 and stroke was probably causal in 2 patients, who presented cortical infarcts and had no relevant arterial or cardioembolic disease, but did show signs of hypercoagulability and systemic inflammation in laboratory analyses. The other 2 patients were of advanced age and presented cardioembolic ischaemic stroke; the association in these patients was probably incidental.

CONCLUSIONS: Systemic inflammation and the potential direct action of the virus may cause endothelial dysfunction, resulting in a hypercoagulable state that could be considered a potential cause of ischaemic stroke. However, stroke involves multiple pathophysiological mechanisms; studies with larger samples are therefore needed to confirm our hypothesis. The management protocol for patients with stroke and COVID-19 should include a complete aetiological study, with the appropriate safety precautions always being observed.

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Authors Full Name

Barrios-Lopez, J M; Rego-Garcia, I; Munoz Martinez, C; Romero-Fabrega, J C; Rivero Rodriguez, M; Ruiz Gimenez, J A; Escamilla-Sevilla, F; Minguez-Castellanos, A; Fernandez Perez, M D.

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

Stroke and mechanical thrombectomy in patients with COVID-19: technical observations and patient characteristics.

Wang A; Mandigo GK; Yim PD; Meyers PM; Lavine SD.

Journal of Neurointerventional Surgery. 2020 May 25.

[Journal Article]

UI: 32451359

BACKGROUND: COVID-19 infections have been shown to be associated with a range of thromboembolic disease.

OBJECTIVE: To describe our endovascular experience in a consecutive series of patients with COVID-19 who presented with large vessel occlusions, and to describe unique findings in this population.

METHODS: Mechanical thrombectomy was performed on five consecutive patients with COVID-19 with large vessel occlusions. A retrospective study of these patients was performed. Patient demographics, laboratory values, mechanical thrombectomy technique, and clinical and angiographic outcomes were reviewed.

RESULTS: Four patients with COVID-19 presented with anterior circulation occlusions and one patient with COVID-19 presented with both anterior and posterior circulation occlusions. All patients had coagulation abnormalities. Mean patient age was 52.8 years. Three patients presented with an intracranial internal carotid artery occlusion. Two patients presented with an intracranial occlusion and a tandem thrombus in the carotid bulb. One patient presented with an occlusion in both the internal carotid and basilar arteries. Clot fragmentation and distal emboli to a new vascular territory were seen in two of five (40%) patients, and downstream emboli were seen in all five (100%) patients. Patient clinical outcome was generally poor in this series of patients with COVID-19 large vessel occlusion.

CONCLUSION: Our series of patients with COVID-19 demonstrated coagulation abnormalities, and compared with our previous experience with mechanical thrombectomy in large vessel occlusion, this group of patients were younger, had tandem or multiple territory occlusions, a large clot burden, and a propensity for clot fragmentation. These patients present unique challenges that make successful revascularization difficult.

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32.

Publisher

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Year of Publication

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Serial Solutions

33.

Impact of the COVID-19 pandemic on the process and outcome of thrombectomy for acute ischemic stroke.

Yang B; Wang T; Chen J; Chen Y; Wang Y; Gao P; Li G; Chen F; Li L; Wang Z; Zhang H; Song H; Ma Q; Jiao L.

Journal of Neurointerventional Surgery. 2020 May 25.

[Journal Article]

Library staff make every effort to provide accurate and complete database search results. However, we assume no liability for information retrieved, its interpretation, applications or omissions. Page 54 of

UI: 32451358

BACKGROUND: The novel coronavirus disease 2019 (COVID-19) pandemic is still spreading across the world. Although the pandemic has an all-round impact on medical work, the degree of its impact on endovascular thrombectomy (EVT) for patients with acute ischemic stroke (AIS) is unclear.

METHODS: We continuously included AIS patients with large artery occlusion who underwent EVT in a comprehensive stroke center before and during the Wuhan shutdown. The protected code stroke (PCS) for screening and treating AIS patients was established during the pandemic. The efficacy and safety outcomes including the rate of successful reperfusion (defined as modified Thrombolysis In Cerebral Infarction (mTICI) graded 2b or 3) and time intervals for reperfusion were compared between two groups: pre-pandemic and pandemic.

RESULTS: A total of 55 AIS patients who received EVT were included. The baseline characteristics were comparable between the two groups. The time from hospital arrival to puncture (174 vs 125.5 min; p=0.002) and time from hospital arrival to reperfusion (213 vs 172 min; p=0.047) were significantly prolonged in the pandemic group compared with the pre-pandemic group. The rate of successful reperfusion was not significantly different between the two groups (85.7% (n=18) vs 88.2% (n=30); OR 0.971, 95% CI 0.785 to 1.203; p=1.000).

CONCLUSION: The results of this study suggest a proper PCS algorithm which combines the COVID-19 screening and protection measures could decrease the impact of the disease on the clinical outcomes of EVT for AIS patients to the lowest extent possible during the pandemic.

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Link to UHN Full Text:

Serial Solutions

34.

COVID-19: Stroke Admissions, Emergency Department Visits, and Prevention Clinic Referrals. Bres Bullrich M; Fridman S; Mandzia JL; Mai LM; Khaw A; Vargas Gonzalez JC; Bagur R; Sposato LA. Canadian Journal of Neurological Sciences. 1-10, 2020 May 26.

[Journal Article]

Library staff make every effort to provide accurate and complete database search results. However, we assume no liability for information retrieved, its interpretation, applications or omissions. Page **56** of

UI: 32450927

We assessed the impact of the coronavirus disease 19 (COVID-19) pandemic on code stroke activations in the ED, stroke unit admissions, and referrals to the stroke prevention clinic at London's regional stroke center, serving a population of 1.8 million in Ontario, Canada. We found a 20% drop in the number of code strokes in 2020 compared to 2019, immediately after the first cases of COVID-19 were officially confirmed. There were no changes in the number of stroke admissions and there was a 22% decrease in the number of clinic referrals, only after the provincial lockdown. Our findings suggest that the decrease in code strokes was mainly driven by patient-related factors such as fear to be exposed to the SARS-CoV-2, while the reduction in clinic referrals was largely explained by hospital policies and the Government lockdown.

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1

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Author NamelD

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

35.

COVID-19 and thrombosis: Beyond a casual association.

Lopez Castro J.

Medicina Clinica. 2020 May 11.

[Letter]

UI: 32446683

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Library staff make every effort to provide accurate and complete database search results. However, we assume no liability for information retrieved, its interpretation, applications or omissions. Page **58** of

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

36.

Management of acute ischemic stroke in patients with COVID-19 infection: Insights from an international panel.

Qureshi Al; Abd-Allah F; Al-Senani F; Aytac E; Borhani-Haghighi A; Ciccone A; Gomez CR; Gurkas E; Hsu CY; Jani V; Jiao L; Kobayashi A; Lee J; Liaqat J; Mazighi M; Parthasarathy R; Miran MS; Steiner T; Toyoda K; Ribo M; Gongora-Rivera F; Oliveira-Filho J; Uzun G; Wang Y.

American Journal of Emergency Medicine. 2020 May 11.

[Case Reports]

UI: 32444298

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1

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Publisher

Authors Full Name

Qureshi, Adnan I; Abd-Allah, Foad; Al-Senani, Fahmi; Aytac, Emrah; Borhani-Haghighi, Afshin; Ciccone, Alfonso; Gomez, Camilo R; Gurkas, Erdem; Hsu, Chung Y; Jani, Vishal; Jiao, Liqun; Kobayashi, Adam; Lee, Jun; Liaqat, Jahanzeb; Mazighi, Mikael; Parthasarathy, Rajsrinivas; Miran, Muhammad Shah; Steiner, Thorsten; Toyoda, Kazunori; Ribo, Marc; Gongora-Rivera, Fernando; Oliveira-Filho, Jamary; Uzun, Guven; Wang, Yongjun.

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Year of Publication

2020

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Serial Solutions

37.

Stroke in a young COVID -19 patient.

Gunasekaran K; Amoah K; Rajasurya V; Buscher MG.

Qjm. 2020 May 22.

[Journal Article]

Library staff make every effort to provide accurate and complete database search results. However, we assume no liability for information retrieved, its interpretation, applications or omissions. Page **61** of

UI: 32442268

Version ID

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Authors Full Name

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

38.

Cerebral Venous Thrombosis associated with COVID-19 infection: causality or coincidence?.

Poillon G; Obadia M; Perrin M; Savatovsky J; Lecler A.

Journal of Neuroradiology. Journal de Neuroradiologie. 2020 May 10.

Library staff make every effort to provide accurate and complete database search results. However, we assume no liability for information retrieved, its interpretation, applications or omissions. Page 62 of

[Letter]

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1

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Authors Full Name

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Year of Publication

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Link to UHN Full Text:

Serial Solutions

39.

Stroke in patients with SARS-CoV-2 infection: case series.

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Morassi M; Bagatto D; Cobelli M; D'Agostini S; Gigli GL; Bna C; Vogrig A.

Journal of Neurology. 2020 May 20.

[Journal Article]

UI: 32436105

BACKGROUND: Italy is one of the most affected countries by the coronavirus disease 2019 (COVID-19). The responsible pathogen is named severe acute respiratory syndrome coronavirus (SARS-CoV-2). The clinical spectrum ranges from asymptomatic infection to severe pneumonia, leading to intensive care unit admission. Evidence of cerebrovascular complications associated with SARS-CoV-2 is limited. We herein report six patients who developed acute stroke during COVID-19 infection.

METHODS: A retrospective case series of patients diagnosed with COVID-19 using reverse-transcriptase polymerase chain reaction (RT-PCR) on nasopharyngeal swabs, who developed clinical and neuroimaging evidence of acute stroke during SARS-CoV-2 infection.

RESULTS: Six patients were identified (5 men); median age was 69 years (range 57-82). Stroke subtypes were ischemic (4, 67%) and hemorrhagic (2, 33%). All patients but one had pre-existing vascular risk factors. One patient developed encephalopathy prior to stroke, characterized by focal seizures and behavioral abnormalities. COVID-19-related pneumonia was severe (i.e., requiring critical care support) in 5/6 cases (83%). Liver enzyme alteration and lactate dehydrogenase (LDH) elevation were registered in all cases. Four patients (67%) manifested acute kidney failure prior to stroke. Four patients (67%) had abnormal coagulation tests. The outcome was poor in the majority of the patients: five died (83%) and the remaining one (17%) remained severely neurologically affected (mRS: 4).

CONCLUSIONS: Both ischemic and hemorrhagic stroke can complicate the course of COVI-19 infection. In our series, stroke developed mostly in patients with severe pneumonia and multiorgan failure, liver enzymes and LDH were markedly increased in all cases, and the outcome was poor.

Version ID Status Publisher Author NameID Morassi, Mauro; ORCID: http://orcid.org/0000-0002-6969-3170 **Authors Full Name** Morassi, Mauro; Bagatto, Daniele; Cobelli, Milena; D'Agostini, Serena; Gigli, Gian Luigi; Bna, Claudio; Vogrig, Alberto.

Institution

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Year of Publication

2020

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Serial Solutions

40.

Anti-Coagulant and Anti-Platelet Therapy in the COVID-19 Patient: A Best Practices Quality Initiative Across a Large Health System.

Watson RA; Johnson DM; Dharia RN; Merli GJ; Doherty JU.

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Hospital practice (1995) Hospital practice. 2020 May 19.

[Journal Article]

UI: 32429774

The coronavirus disease 2019 (COVID-19) pandemic due to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has challenged health care systems and physicians worldwide to attempt to provide the best care to their patients with an evolving understanding of this unique pathogen. This disease and its worldwide impact have sparked tremendous interest in the epidemiology, pathogenesis, and clinical consequences of COVID-19. This accumulating body of evidence has centered around case series and often empiric therapies as controlled trials are just getting underway. What is clear is that patients appear to be at higher risk for thrombotic disease states including acute coronary syndrome (ACS), venous thromboembolism (VTE) such as deep vein thrombosis (DVT) or pulmonary embolism (PE), or stroke. Patients with underlying cardiovascular disease are also at higher risk for morbidity and mortality if infected. These patients are commonly treated with anticoagulation and/or antiplatelet medications and less commonly thrombolysis during hospitalization, potentially with great benefit but management of these medications can be difficult in potentially critically ill patients. In this paper, we review the current guidelines, consensus statements, and emerging evidence for a wide range of cardiovascular disease states with special focus on anticoagulant and antiplatelet therapy. Our goal is to provide guidance for treatment of the cardiovascular patient with COVID-19 in the face of a rapidly evolving understanding of this virus and its complications. Preamble: Anticoagulant and antiplatelet therapies are a major cause of inpatient morbidity and mortality. This is amplified in critically ill patients. COVID-19 patients present special challenges due to rapidly changing clinical status. In an effort to align practice patterns across a large health system (Jefferson Health 2,622 staffed inpatient beds and 319 intensive care unit (ICU) beds across 14 facilities), a task force was assembled to address the utilization of anti-thrombotic and anti-platelet therapy in COVID-19 positive or suspected patients. The task force incorporated experts in Cardiology, Vascular Medicine, Hematology, Vascular Surgery, Pharmacy, and Vascular Neurology. Current guidelines, consensus documents, and policy documents from specialty organizations were used to formulate health system recommendations. Our deliberations and treatment recommendations are summarized here.

Objective: To provide guidance to the utilization of antithrombotic and antiplatelet therapies in patients with known or suspected COVID-19.

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1

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Year of Publication

2020

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Serial Solutions

41.

Thrombotic risk in COVID-19: a case series and case-control study.

Stoneham SM; Milne KM; Nuttal E; Frew GH; Sturrock BR; Sivaloganathan H; Ladikou EE; Drage S; Phillips B; Chevassut TJ; Eziefula AC.

Library staff make every effort to provide accurate and complete database search results. However, we assume no liability for information retrieved, its interpretation, applications or omissions. Page 67 of

Clinical Medicine. 2020 May 18.

[Journal Article]

UI: 32423903

BACKGROUND: A possible association between COVID-19 infection and thrombosis, either as a direct consequence of the virus or as a complication of inflammation, is emerging in the literature. Data on the incidence of venous thromboembolism (VTE) are extremely limited.

METHODS: We describe three cases of thromboembolism refractory to heparin treatment, the incidence of VTE in an inpatient cohort, and a case-control study to identify risk factors associated with VTE.

RESULTS: We identified 274 confirmed (208) or probable (66) COVID-19 patients. 21 (7.7%) were diagnosed with VTE. D-dimer was elevated in both cases (confirmed VTE) and controls (no confirmed VTE) but higher levels were seen in confirmed VTE cases (4.1 vs 1.2 mug/mL, P<0.001).

CONCLUSION: Incidence of VTE is high in patients hospitalised with COVID-19. Urgent clinical trials are needed to evaluate the role of anticoagulation in COVID-19. Monitoring of D-dimer and anti-factor Xa levels may be beneficial in guiding management.

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Version ID

1

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Authors Full Name

Stoneham, Simon M; Milne, Kate M; Nuttal, Elisabeth; Frew, Georgina H; Sturrock, Beattie R; Sivaloganathan, Helena; Ladikou, Eleni E; Drage, Stephen; Phillips, Barbara; Chevassut, Timothy Jt; Eziefula, Alice C.

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Year of Publication

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Serial Solutions

42.

Deep Vein Thrombosis in Hospitalized Patients with Coronavirus Disease 2019 (COVID-19) in Wuhan, China: Prevalence, Risk Factors, and Outcome.

Zhang L; Feng X; Zhang D; Jiang C; Mei H; Wang J; Zhang C; Li H; Xia X; Kong S; Liao J; Jia H; Pang X; Song Y; Tian Y; Wang B; Wu C; Yuan H; Zhang Y; Li Y; Sun W; Zhang Y; Zhu S; Wang S; Xie Y; Ge S; Zhang L; Hu Y; Xie M.

Circulation. 2020 May 18.

[Journal Article]

UI: 32421381

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Background: To investigate deep vein thrombosis (DVT) in hospitalized patients with coronavirus disease 2019 (COVID-19), we performed a single institutional study to evaluate its prevalence, risk factors, prognosis, and potential thromboprophylaxis strategies in a large referral and treatment center.

Methods: We studied a total of 143 patients with COVID-19 from January 29 to February 29, 2020. Demographic and clinical data, laboratory data, including ultrasound scans of the lower extremities, and outcome variables were obtained, comparisons were made between DVT and non-DVT groups.

Results: Of the 143 patients hospitalized with COVID-19 (aged 63 +/- 14 years; 74 [51.7%] man), 66 patients developed lower extremity DVT (46.1%, included 23 [34.8%] with proximal DVT and 43 [65.2%] with distal DVT). Compared with patients who with no DVT, patients with DVT were older and had a lower oxygenation index, a higher rate of cardiac injury, and worse prognosis including an increased proportion of deaths (23 [34.8%] vs 9 [11.7%], P = 0.001) and a decreased proportion of patients discharged (32 [48.5%] vs 60 [77.9%], P < 0.001). Multivariant analysis only showed an association between CURB-65 score 3-5 (OR = 6.122, P = 0.031), Padua prediction score >= 4 (OR = 4.016, P = 0.04), and D-dimer >1.0 (mug/ml) (OR = 5.818, P < 0.014) and DVT in this cohort, respectively. The combination of a CURB-65 score 3-5, a Padua prediction score >= 4, and D-dimer > 1.0 (mug/ml) has a sensitivity of 88.52% and a specificity of 61.43% for screening for DVT. In the subgroup of patients with a Padua prediction score >= 4 and whose ultrasound scans were performed >72 hours after admission, DVT was present in 18 (34.0%) of the subgroup receiving venous thromboembolism prophylaxis vs 35 (63.3%) in the nonprophylaxis group (P = 0.010). Conclusions: The prevalence of DVT is high and is associated with adverse outcomes in hospitalized patients with COVID-19. Prophylaxis for venous thromboembolism may be protective in patients with a Padua protection score >= 4 after admission. Our data seem to suggest that COVID-19 is probably an additional risk factor for DVT in the hospitalized patients.

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1

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Authors Full Name

Zhang, Li; Feng, Xiaokai; Zhang, Danqing; Jiang, Chunguo; Mei, Heng; Wang, Jing; Zhang, Cuihong; Li, Hong; Xia, Xiaoling; Kong, Shuangshuang; Liao, Jia; Jia, Huijun; Pang, Xueqin; Song, Yue; Tian, Ying; Wang, Bin; Wu, Chun; Yuan, Hongliang; Zhang, Yongxing; Li, Yuman; Sun, Wei; Zhang, Yanting; Zhu, Shuangshuang; Wang, Shuyuan; Xie, Yuji; Ge, Shuping; Zhang, Liming; Hu, Yu; Xie, Mingxing.

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Serial Solutions

43.

Falling stroke rates during COVID-19 pandemic at a Comprehensive Stroke Center: Cover title: Falling stroke rates during COVID-19.

Siegler JE; Heslin ME; Thau L; Smith A; Jovin TG.

Journal of Stroke & Cerebrovascular Diseases. 104953, 2020 May 14.

[Journal Article]

UI: 32410808

Introduction: Although there is evidence to suggest a high rate of cerebrovascular complications in patients with SARS-CoV-2 infection, anecdotal reports indicate a falling rate of new ischemic stroke diagnoses. We conducted an exploratory single-center analysis to estimate the change in number of new stroke diagnoses in our region, and evaluate the proximate reasons for this change during the COVID-19 pandemic at a tertiary care center in New Jersey.

Patients and Methods: A Comprehensive Stroke Center prospective cohort was retrospectively analyzed for the number of stroke admissions, demographic features, and short-term outcomes 5 months prior to 3/1/2020 (pre-COVID-19), and in the 6 weeks that followed (COVID-19 period). The primary outcome was the number of new acute stroke diagnoses before and during the COVID-19 period, as well as the potential reasons for a decline in the number of new diagnoses.

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Results: Of the 328 included patients, 53 (16%) presented in the COVID-19 period. There was a mean fall of 38% in new stroke diagnoses (mean 1.13/day [SD 1.07] from 1.82/day [SD 1.38], p<0.01), which was related to a 59% decline in the number of daily transfers from referral centers (p<0.01), 25% fewer telestroke consultations (p=0.08), and 55% fewer patients presenting directly to our institution by private vehicle (p<0.01) and 29% fewer patients through emergency services (p=0.09). There was no significant change in the monthly number of strokes due to large vessel occlusion (LVO), however the proportion of new LVOs nearly doubled in the COVID-19 period (38% vs. 21%, p=0.01).

Conclusions: The observations at our tertiary care corroborate anecdotal reports that the number of new stroke diagnoses is falling, which seems related to a smaller proportion of patients seeking healthcare services for milder symptoms. These preliminary data warrant validation in larger, multicenter studies.

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44.

Neurological manifestations and complications of COVID-19: A literature review. [Review]

Ahmad I; Rathore FA.

Journal of Clinical Neuroscience. 2020 May 06.

[Journal Article. Review]

UI: 32409215

The Coronavirus disease due to SARS-CoV-2 emerged in Wuhan city, China in December 2019 and rapidly spread to more than 200 countries as a global health pandemic. There are more than 3.5 million confirmed cases and around 165,000 to 243,000 fatalities. The primary manifestation is respiratory and cardiac but neurological features are also being reported in the literature as case reports and case series. The most common reported symptoms to include headache and dizziness followed by encephalopathy and delirium. Among the complications noted are Cerebrovascular accident, Guillian barre syndrome, acute transverse myelitis, and acute encephalitis. The most common peripheral manifestation was hyposmia. It is further noted that sometimes the neurological manifestations can precede the typical features like fever and cough and later on typical manifestations develop in these patients. Hence a high index of suspicion is required for timely diagnosis and isolation of cases to prevent the spread in neurology wards. We present a narrative review of the neurological manifestations working with suspected cases of COVID-19. Our aim is to update the neurologists and physicians working with suspected cases of COVID-19 about the possible neurological presentations and the probable neurological complications resulting from this novel virus infection.

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Version ID 1 Status Publisher Authors Full Name Ahmad, Imran; Rathore, Farooq Azam. Institution

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Year of Publication

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Serial Solutions

45.

Coexistence of COVID-19 and acute ischemic stroke report of four cases.

Tunc A; Unlubas Y; Alemdar M; Akyuz E.

Journal of Clinical Neuroscience. 2020 May 06.

[Case Reports]

UI: 32409210

Coronaviruses are revealed to target the human respiratory system mainly. However, they also have neuro-invasive abilities and might spread from the respiratory system to the central nervous system. Herein, we report four patients with COVID-19 simultaneously diagnosed with acute ischemic stroke. There were four stroke cases with simultaneously diagnosis of Covid-19 till the April 14, 2020 in the city of Sakarya, Turkey. They were aged between 45 and 77 years. All four cases were likely to have contracted the virus in Sakarya. The patients had all commonly reported symptoms of Covid-19. Three patients have elevated D-dimer levels, and two of them had high C-reactive protein (CRP) levels. They were managed symptomatically for both the infection and the stroke. Our findings suggest that ischemic cerebrovascular diseases may simultaneously develop in the course of Covid-19 independently of the critical disease process. Increased inflammation predicted by CRP and D-dimer levels may play a role in the formation of ischemia. In particular, elder patients with prothrombotic risk factors should also be considered for the signs of cerebrovascular events in addition to infectious symptoms.

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Year of Publication

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Serial Solutions

46.

COVID-19 and ischemic stroke: Should we systematically look for lupus anticoagulant and antiphospholipid antibodies?.

Aubignat M; Godefroy O.

Revue Neurologique. 2020 May 08.

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[Editorial]

UI: 32409176

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Year of Publication

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Serial Solutions

47.

Prophylactic anticoagulant therapy for reducing the risk of stroke and other thrombotic events in COVID-19 patients.

Aghamohammadi M; Alizargar J; Hsieh NC; Wu SV.

Journal of the Formosan Medical Association. 2020 May 10.

[Letter]

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UI: 32402522

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Year of Publication

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Serial Solutions

48.

Coagulopathy in COVID-19.

Mucha SR; Dugar S; McCrae K; Joseph DE; Bartholomew J; Sacha G; Militello M.

Library staff make every effort to provide accurate and complete database search results. However, we assume no liability for information retrieved, its interpretation, applications or omissions. Page **79** of

Cleveland Clinic Journal of Medicine. 2020 May 14.

[Journal Article]

UI: 32409435

COVID-19-associated coagulopathy is common in patients with COVID-19, causing high rates of thrombotic complications that increase the morbidity and mortality. Markedly elevated levels of D-dimer with normal fibrinogen levels are the hallmark laboratory findings and correlate with severity of illness and risk of thrombosis. Aggressive VTE prophylaxis is paramount for all patients with COVID-19. Patients with very high D-dimer levels (6 times the upper limit of normal, greater than 3,000 ng/mL) have the greatest risk of thrombosis and may benefit from active screening and more intensive VTE prophylaxis.

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Publisher

Authors Full Name

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Year of Publication

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Serial Solutions

49.

Cerebrovascular Disease in COVID-19.

Goldberg MF; Goldberg MF; Cerejo R; Tayal AH.

Ajnr: American Journal of Neuroradiology. 2020 May 14.

[Journal Article]

UI: 32409316

Coronavirus disease 19 (COVID-19) is a pandemic originating in Wuhan, China, in December 2019. Early reports suggest that there are neurologic manifestations of COVID-19, including acute cerebrovascular disease. We report a case of COVID-19 with acute ischemic stroke. To our knowledge, this is the first reported case of COVID-19-related cerebral infarcts that includes brain imaging at multiple time points and CT angiography. There is a growing body of published evidence that complications of COVID-19 are not limited to the pulmonary system. Neuroradiologists should be aware of a wide range of neurologic manifestations, including cerebrovascular disease.

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Serial Solutions

50.

Evaluation of coagulation function by rotation thromboelastometry in critically ill patients with severe COVID-19 pneumonia.

Pavoni V; Gianesello L; Pazzi M; Stera C; Meconi T; Frigieri FC.

Journal of Thrombosis & Thrombolysis. 2020 May 11.

[Journal Article]

UI: 32394236

Critically ill patients with COVID-19 pneumonia suffered both high thrombotic and bleeding risk. The effect of SARS-CoV-2 on coagulation and fibrinolysis is not well known. We conducted a retrospective study of critically ill patients admitted to an intensive care unit (ICU) a cause of severe COVID-19 pneumonia and we evaluated coagulation function using rotational thromboelastometry (ROTEM) on day of admission (T0) and 5 (T5) and 10 (T10) days after admission to ICU. Coagulation standard parameters were also evaluated. Forty patients were enrolled into the study. The ICU and the hospital

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mortality were 10% and 12.5%, respectively. On ICU admission, prothrombin time was slightly reduced and it increased significantly at T10 (T0 = 65.1 +/- 9.8 vs T10 = 85.7 +/- 1.5, p = 0.002), while activated partial thromboplastin time and fibrinogen values were higher at T0 than T10 (32.2 +/- 2.9 vs 27.2 +/-2.1, p = 0.017 and 895.1 +/- 110 vs 332.5 +/- 50, p = 0.002, respectively); moreover, whole blood thromboelastometry profiles were consistent with hypercoagulability characterized by an acceleration of the propagation phase of blood clot formation [i.e., CFT below the lower limit in INTEM 16/40 patients (40%) and EXTEM 20/40 patients (50%)] and significant higher clot strength [MCF above the upper limit in INTEM 20/40 patients (50%), in EXTEM 28/40 patients (70%) and in FIBTEM 29/40 patients (72.5%)]; however, this hypercoagulable state persists in the first five days, but it decreases ten day after, without returning to normal values. No sign of secondary hyperfibrinolysis or sepsis induced coagulopathy (SIC) were found during the study period. In six patients (15%) a deep vein thrombosis and in 2 patients (5%) a thromboembolic event, were found; 12 patients (30%) had a catheter-related thrombosis. ROTEM analysis confirms that patients with severe COVID-19 pneumonia had a hypercoagulation state that persisted over time.

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1

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

51.

COVID-19: progression of disease and intravascular coagulation - present status and future perspectives. [Review]

Harenberg J; Favaloro E.

Clinical Chemistry & Laboratory Medicine. 2020 May 14.

[Journal Article. Review]

UI: 32406381

The timely and accurate diagnosis of infection with severe acute respiratory syndrome (SARS) coronavirus 2 (SARS-CoV-2), the cause of coronavirus disease 2019 (COVID-19), remains the cornerstone of efforts to provide appropriated treatment for patients, to limit further spread of the virus and ultimately to eliminate the virus from the human society. We focus this article on (a) developments for improvement of diagnosis of specific SARS-CoV-2 virus, (b) laboratory changes in the immunologic and coagulation system, (c) therapeutic options for anticoagulant treatment of seriously affected patients and (d) on the perspectives through improvement of diagnostic and therapeutic medical procedures.

Version ID

1

Status

Publisher

Authors Full Name

Harenberg, Job; Favaloro, Emmanuel.

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

52.

Severe Acute Respiratory Syndrome Coronavirus 2 Infection and Ischemic Stroke.

Valderrama EV; Humbert K; Lord A; Frontera J; Yaghi S.

Stroke. STROKEAHA120030153, 2020 May 12.

[Journal Article]

UI: 32396456

Version ID

1

Status

Publisher

Authors Full Name

Valderrama, Eduard Valdes; Humbert, Kelley; Lord, Aaron; Frontera, Jennifer; Yaghi, Shadi.

Institution

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Valderrama, Eduard Valdes. From the Department of Neurology, NYU Langone Health, New York, NY. Humbert, Kelley. From the Department of Neurology, NYU Langone Health, New York, NY. Lord, Aaron. From the Department of Neurology, NYU Langone Health, New York, NY. Frontera, Jennifer. From the Department of Neurology, NYU Langone Health, New York, NY. Yaghi, Shadi. From the Department of Neurology, NYU Langone Health, New York, NY.

Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

53.

High risk of thrombosis in patients with severe SARS-CoV-2 infection: a multicenter prospective cohort study.

Helms J; Tacquard C; Severac F; Leonard-Lorant I; Ohana M; Delabranche X; Merdji H; Clere-Jehl R; Schenck M; Fagot Gandet F; Fafi-Kremer S; Castelain V; Schneider F; Grunebaum L; Angles-Cano E; Sattler L; Mertes PM; Meziani F; CRICS TRIGGERSEP Group (Clinical Research in Intensive Care and Sepsis Trial Group for Global Evaluation and Research in Sepsis).

Intensive Care Medicine. 2020 May 04.

[Journal Article]

UI: 32367170

PURPOSE: Little evidence of increased thrombotic risk is available in COVID-19 patients. Our purpose was to assess thrombotic risk in severe forms of SARS-CoV-2 infection.

METHODS: All patients referred to 4 intensive care units (ICUs) from two centers of a French tertiary hospital for acute respiratory distress syndrome (ARDS) due to COVID-19 between March 3rd and 31st 2020 were included. Medical history, symptoms, biological data and imaging were prospectively

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collected. Propensity score matching was performed to analyze the occurrence of thromboembolic events between non-COVID-19 ARDS and COVID-19 ARDS patients.

RESULTS: 150 COVID-19 patients were included (122 men, median age 63 [53; 71] years, SAPSII 49 [37; 64] points). Sixty-four clinically relevant thrombotic complications were diagnosed in 150 patients, mainly pulmonary embolisms (16.7%). 28/29 patients (96.6%) receiving continuous renal replacement therapy experienced circuit clotting. Three thrombotic occlusions (in 2 patients) of centrifugal pump occurred in 12 patients (8%) supported by ECMO. Most patients (> 95%) had elevated D-dimer and fibrinogen. No patient developed disseminated intravascular coagulation. Von Willebrand (vWF) activity, vWF antigen and FVIII were considerably increased, and 50/57 tested patients (87.7%) had positive lupus anticoagulant. Comparison with non-COVID-19 ARDS patients (n = 145) confirmed that COVID-19 ARDS patients (n = 77) developed significantly more thrombotic complications, mainly pulmonary embolisms (11.7 vs. 2.1%, p < 0.008). Coagulation parameters significantly differed between the two groups.

CONCLUSION: Despite anticoagulation, a high number of patients with ARDS secondary to COVID-19 developed life-threatening thrombotic complications. Higher anticoagulation targets than in usual critically ill patients should therefore probably be suggested.

Version ID

1

Status

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Authors Full Name

Helms, Julie; Tacquard, Charles; Severac, Francois; Leonard-Lorant, Ian; Ohana, Mickael; Delabranche, Xavier; Merdji, Hamid; Clere-Jehl, Raphael; Schenck, Malika; Fagot Gandet, Florence; Fafi-Kremer, Samira; Castelain, Vincent; Schneider, Francis; Grunebaum, Lelia; Angles-Cano, Eduardo; Sattler, Laurent; Mertes, Paul-Michel; Meziani, Ferhat; CRICS TRIGGERSEP Group (Clinical Research in Intensive Care and Sepsis Trial Group for Global Evaluation and Research in Sepsis).

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Serial Solutions

54.

Incidence of venous thromboembolism in hospitalized patients with COVID-19.

Middeldorp S; Coppens M; van Haaps TF; Foppen M; Vlaar AP; Muller MCA; Bouman CCS; Beenen LFM; Kootte RS; Heijmans J; Smits LP; Bonta PI; van Es N.

Journal of Thrombosis & Haemostasis. 2020 May 05.

[Journal Article]

UI: 32369666

Coronavirus disease 2019 (COVID-19) can lead to systemic coagulation activation and thrombotic complications. We investigated the incidence of objectively confirmed venous thromboembolism (VTE) in 198 hospitalized patients with COVID-19 in a single-center cohort study. Seventy-five patients (38%) were admitted to the intensive care unit (ICU). At time of data collection, 16 (8%) were still hospitalized and 19% had died. During a median follow-up of 7 days (IQR, 3-13), 39 patients (20%) were diagnosed

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with VTE of whom 25 (13%) had symptomatic VTE, despite routine thrombosis prophylaxis. The cumulative incidences of VTE at 7, 14 and 21 days were 16% (95% CI, 10-22), 33% (95% CI, 23-43) and 42% (95% CI 30-54) respectively. For symptomatic VTE, these were 10% (95% CI, 5.8-16), 21% (95% CI, 14-30) and 25% (95% CI 16-36). VTE appeared to be associated with death (adjusted HR, 2.4; 95% CI, 1.02-5.5). The cumulative incidence of VTE was higher in the ICU (26% (95% CI, 17-37), 47% (95% CI, 34-58), and 59% (95% CI, 42-72) at 7, 14 and 21 days) than on the wards (any VTE and symptomatic VTE 5.8% (95% CI, 1.4-15), 9.2% (95% CI, 2.6-21), and 9.2% (2.6-21) at 7, 14, and 21 days). The observed risk for VTE in COVID-19 is high, particularly in ICU patients, which should lead to a high level of clinical suspicion and low threshold for diagnostic imaging for DVT or PE. Future research should focus on optimal diagnostic and prophylactic strategies to prevent VTE and potentially improve survival.

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Version ID

1

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Year of Publication

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Link to UHN Full Text:

Serial Solutions

55.

COVID-19 presenting as stroke.

Avula A; Nalleballe K; Narula N; Sapozhnikov S; Dandu V; Toom S; Glaser A; Elsayegh D.

Brain, Behavior, & Immunity. 2020 Apr 28.

[Journal Article]

UI: 32360439

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OBJECTIVE: Acute stroke remains a medical emergency even during the COVID-19 pandemic. Most patients with COVID-19 present with constitutional and respiratory symptoms, some patients present with atypical symptoms including gastrointestinal, cardiovascular, or neurological symptoms. Here we present a series of four COVID-19 patients with acute stroke as a presenting symptom.

METHODS: We searched the hospital databases for patients presenting with acute strokes and suspected COVID-19 features. All patients that had imaging confirmed strokes and PCR confirmed COVID-19 were included in the study. Patients admitted to the hospital with PCR confirmed COVID-19 disease whose hospital course was complicated with acute stroke while inpatient were excluded from the study. Retrospective patient data were obtained from electronic medical records. Informed consent was obtained.

RESULTS: We identified four patients presenting with imaging confirmed acute strokes and PCR confirmed SARS-CoV-2 infection. We elucidate the clinical characteristics, imaging findings, and the clinical course.

CONCLUSIONS: Timely assessment and hyperacute treatment is the key to minimize mortality and morbidity of patients with acute stroke. Stroke teams should be wary of the fact that COVID-19 patients can present with cerebrovascular accidents and dawn appropriate personal protective equipment in every suspected patient. Further studies are urgently needed for a comprehensive understanding of the neurological pathology of COVID-19 and its effects on the nervous system.

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1

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Authors Full Name

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

56.

Hypercoagulation and Antithrombotic Treatment in Coronavirus 2019: A New Challenge.

Violi F; Pastori D; Cangemi R; Pignatelli P; Loffredo L.

Thrombosis & Haemostasis. 2020 Apr 29.

[Journal Article]

UI: 32349133

The novel coronavirus 2019 (COVID-19) is clinically characterized by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is responsible for a high number of patients needing mechanical ventilation or intensive care units treatment and for the elevated mortality risk. A link between COVID-19 and multiorgan failure may be dependent on the fact that most COVID-19 patients are complicated by pneumonia, which is known to be associated with early changes of clotting and platelet activation and artery dysfunction; these changes may implicate in thrombotic-related events such as myocardial infarction and ischemic stroke. Recent data showed that myocardial injury compatible with coronary

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ischemia may be detectable in SARS-CoV-2 patients and laboratory data exploring clotting system suggest the presence of a hypercoagulation state. Thus, we performed a systematic review of COVID-19 literature reporting measures of clotting activation to assess if changes are detectable in this setting and their relationship with clinical severity. Furthermore, we discussed the biologic plausibility of the thrombotic risk in SARS-CoV-2 and the potential use of an antithrombotic treatment.

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

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57.

Coagulation abnormalities and thrombosis in patients with COVID-19.

Levi M; Thachil J; Iba T; Levy JH.

The Lancet Haematology. 7(6):e438-e440, 2020 06.

[Journal Article]

UI: 32407672

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1

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Authors Full Name

Levi, Marcel; Thachil, Jecko; Iba, Toshiaki; Levy, Jerrold H.

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Year of Publication

2020

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Serial Solutions

58.

Covid-19 and thrombosis: what do we know about the risks and treatment?.

Wise J.

BMJ. 369:m2058, 2020 May 21.

[Journal Article]

UI: 32439704

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1

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Year of Publication

2020

Link to UHN Full Text:

Serial Solutions

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59.

COVID-19-Related Stroke.

Hess DC; Eldahshan W; Rutkowski E.

Translational Stroke Research. 11(3):322-325, 2020 06.

[Letter. Research Support, N.I.H., Extramural]

UI: 32378030

The COVID-19 pandemic is associated with neurological symptoms and complications including stroke. There is hypercoagulability associated with COVID-19 that is likely a "sepsis-induced coagulopathy" and may predispose to stroke. The SARS-CoV-2 virus binds to angiotensin-converting enzyme 2 (ACE2) present on brain endothelial and smooth muscle cells. ACE2 is a key part of the renin angiotensin system (RAS) and a counterbalance to angiotensin-converting enzyme 1 (ACE1) and angiotensin II. Angiotensin II is proinflammatory, is vasoconstrictive, and promotes organ damage. Depletion of ACE2 by SARS-CoV-2 may tip the balance in favor of the "harmful" ACE1/angiotensin II axis and promote tissue injury including stroke. There is a rationale to continue to treat with tissue plasminogen activator for COVID-19-related stroke and low molecular weight heparinoids may reduce thrombosis and mortality in sepsisinduced coagulopathy.

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1

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Year of Publication

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Serial Solutions

60.

COVID-19 and coagulative axis: review of emerging aspects in a novel disease. [Review]

Boccia M; Aronne L; Celia B; Mazzeo G; Ceparano M; D'Agnano V; Parrella R; Valente T; Bianco A; Perrotta F.

Monaldi Archives for Chest Disease. 90(2), 2020 May 19.

[Journal Article. Review]

UI: 32425013

Latest evidences from literature suggest that SARS-CoV-2 disease 2019 (COVID-19) is commonly complicated with coagulopathy and that disseminated intravascular coagulation is present in the majority of deceased patients. Particularly, conventional coagulation parameters appear to be significantly altered in patients with poor prognosis. A wide-ranging cross- talk between coagulative haemostasis and inflammation, as well as the activation of coagulation cascade during viral infections, are well established. Another important evidence which may explain coagulation disorders in COVID-19 is the increase of thrombus formation under conditions of hypoxia. Despite the exact pathophysiological mechanism of coronavirus-induced thromboembolism needs to be further investigated, this finding suggests that it is good practice to assess the risk of thrombosis in COVID-19 patients to improve the clinical management in terms of anticoagulation therapy. Anticoagulants, mainly low-molecular-weight heparin (LMWH), should be tailored in patients meeting sepsis induced coagulopathy (SIC) criteria or with markedly elevated D-dimer. In this context, further studies are needed to optimise the decision making in therapeutic approach.

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61.

Large-Vessel Stroke as a Presenting Feature of Covid-19 in the Young.

Oxley TJ; Mocco J; Majidi S; Kellner CP; Shoirah H; Singh IP; De Leacy RA; Shigematsu T; Ladner TR; Yaeger KA; Skliut M; Weinberger J; Dangayach NS; Bederson JB; Tuhrim S; Fifi JT.

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Ovid MEDLINE(R) ALL <1946 to June 03, 2020>

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|---|--|---------|----------|
| 1 | exp Stroke/ | 133142 | Advanced |
| 2 | stroke?.mp. | 296321 | Advanced |
| 3 | ((cerebrovascular or vascular) adj2 accident?).mp. | 8960 | Advanced |
| 4 | exp Blood Coagulation/ | 58593 | Advanced |
| 5 | (blood adj2 (coagulation* or clot*)).mp. | 93590 | Advanced |
| 6 | exp Thrombosis/ | 128749 | Advanced |

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| 7 | thrombos?s.mp. | 194437 | Advanced |
|----|--|--------|----------|
| 8 | 1 or 2 or 3 or 4 or 5 or 6 or 7 | 606286 | Advanced |
| 9 | limit 8 to covid-19 | 333 | Advanced |
| 10 | limit 9 to dt="20200425-20200604" | 280 | Advanced |
| 11 | remove duplicates from 10 | 276 | Advanced |
| 12 | from 11 keep 5-6, 8, 10, 12, 14-16, 23 | 61 | Advanced |

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