



TRANSFORMING THE COVID-19 PANDEMIC INTO AN OPPORTUNITY

Young Erben MD
Associate Professor of Surgery
Division of Vascular and Endovascular Surgery



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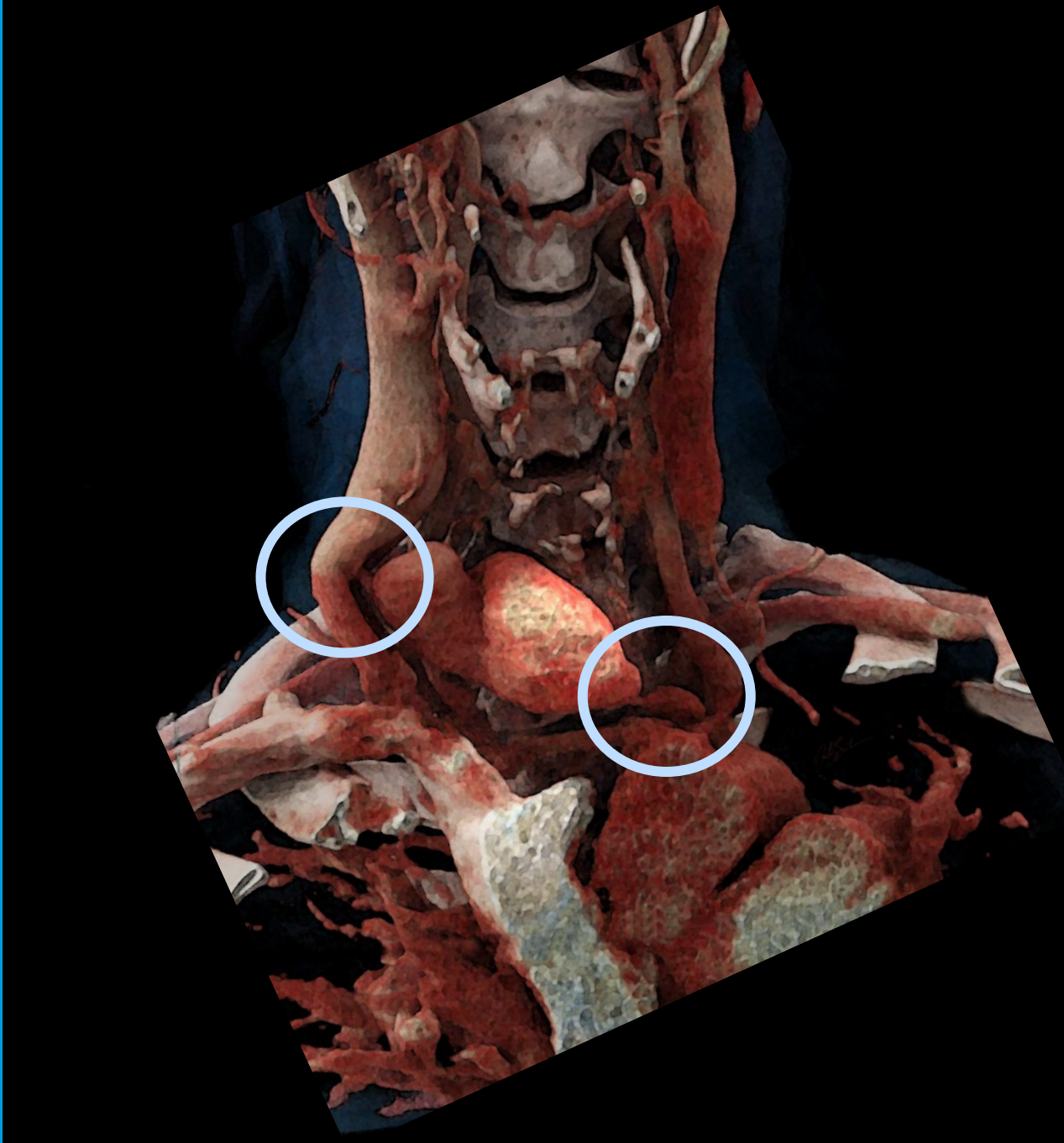
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COVID-19 GOALS

There are days I wonder if
I will ever be strong enough.

There are days I wonder if I will ever stop
having multiples battles to handle at once.

There are days I wonder if
I will ever stop feeling the pain.

Then there are days that
I want to push it all aside and just be -

Just be in the moment and
not give those thoughts any power

Today, I am choosing to give power to being in
the moment

-slm

11 March 2020

Deeply concerned both by the alarming levels of spread and severity, and by the WHO made the assessment that COVID-19 can be contained...

13 March 2020

COVID-19 Solidarity Response Fund launched to receive donations from individuals and institutions.

18 March 2020

WHO and partners launch the Solidarity Trial, an international clinical trial from around the world to find the most effective treatments for COVID-19.

WHO newsletter Subscribe to our newsletter

COVID-19

Mayo Clinic announces sweeping pay cuts, furloughs


Catharine Richert Rochester, Minn. April 10, 2020 5:00 p.m.



Mayo Clinic's cost-cutting measures follow its decision in mid-March to halt elective surgeries and procedures — a move that was quickly...

FIRST STEP

- Started a simple IRB that allowed us to look at the charts of patients with COVID-19 infection
- With COVID-19 Task Force approval



The screenshot shows the top of the Mayo Clinic Research website. The header features the text "INSIDE MAYO CLINIC RESEARCH" in white and light blue on a dark blue background. Below the header is a navigation menu with links for "Home", "Leadership News", "Research Priorities", "FYI", "In the News", and "Pe". A secondary menu includes "IRB & IACUC" and "Lectures & Events". The main content area displays a news article titled "Mayo Clinic activates COVID-19 Research Task Force" dated Mar. 24, 2020, categorized under "Leadership News" with "no comments". The article text begins with "Colleagues," and states: "We have created a COVID-19 Research Task Force to coordinate all research related to COVID-19. Andrew Badley, M.D., will lead this group." To the right of the text is a photograph of a blue Mayo Clinic flag flying in front of a modern glass skyscraper.

NEXT STEP...

- Kept up reading the literature on COVID-19 patients
- Started collecting patient data ... fast forward to 03/25/2022: we have over 10K patients and 182 variables → 1.8M datapoints

The screenshot shows an Excel spreadsheet with the following columns: MRN, Internal cod, Was the patient Regi, Date of SARS- Date of Admission, Sex, Age, Ethnicity Race, Cong, Hyper, Coror, Myocardi, Diabe, Chro, Periph, Ische, Traos, NEUR, Cance, Symp, Atrial, Hyper, Trans, Hepat, Hepat, HIV, Anthi, Lipid, Antipi, CHAD, Intu. The data is organized into rows, with some cells highlighted in yellow.

NEXT STEP...

- Started to brainstorm and discuss with colleagues about topics of investigation



Deep vein thrombosis and pulmonary embolism among hospitalized coronavirus disease 2019–positive patients predicted for higher mortality and prolonged intensive care unit and hospital stays in a multisite healthcare system

Young Erben, MD,^a Camila Franco-Mesa, MD,^a Peter Gloviczki, MD,^k William Stone, MD,^p Alfredo Quinones-Hinojoas, MD,^c Andrew J. Meltzer, MD,^p Michelle Lin, MD,^b Melanie R. F. Greenway, MD,^b Osman Hamid, MD,^a Zlatko Devcic, MD,^d Beau Toskich, MD,^d Charles Ritchie, MD,^d Christopher J. Lamb, MD,^b Randall R. De Martino, MD,^k Jason Siegel, MD,^{b,c,e} Houssan Farres, MD,^a Albert G. Hakaim, MD,^a Devang K. Sanghavi, MD,^e Yupeng Li, PhD,^q Candido Rivera, MD,^f Pablo Moreno-Franco, MD,^e Nancy L. O’Keefe, BA,^g Neethu Gopal, MD,^b Christopher P. Marquez, MD,^h Josephine F. Huang, MD,^b Manju Kalra, MD,^k Raymond Shields, MD,^l Mercedes Prudencio, PhD,^{ij} Tania Gendron, PhD,^{ij} Robert McBane, MD,^l Myung Park, MD, MS,^m Jonathan B. Hoyne, PhD,^h Leonard Petrucelli, PhD,^{ij} John C. O’Horo, MD,^{n,o} and James F. Meschia, MD,^b *Jacksonville, Fla; Rochester, Minn; Scottsdale, Ariz; Glassboro, NJ*

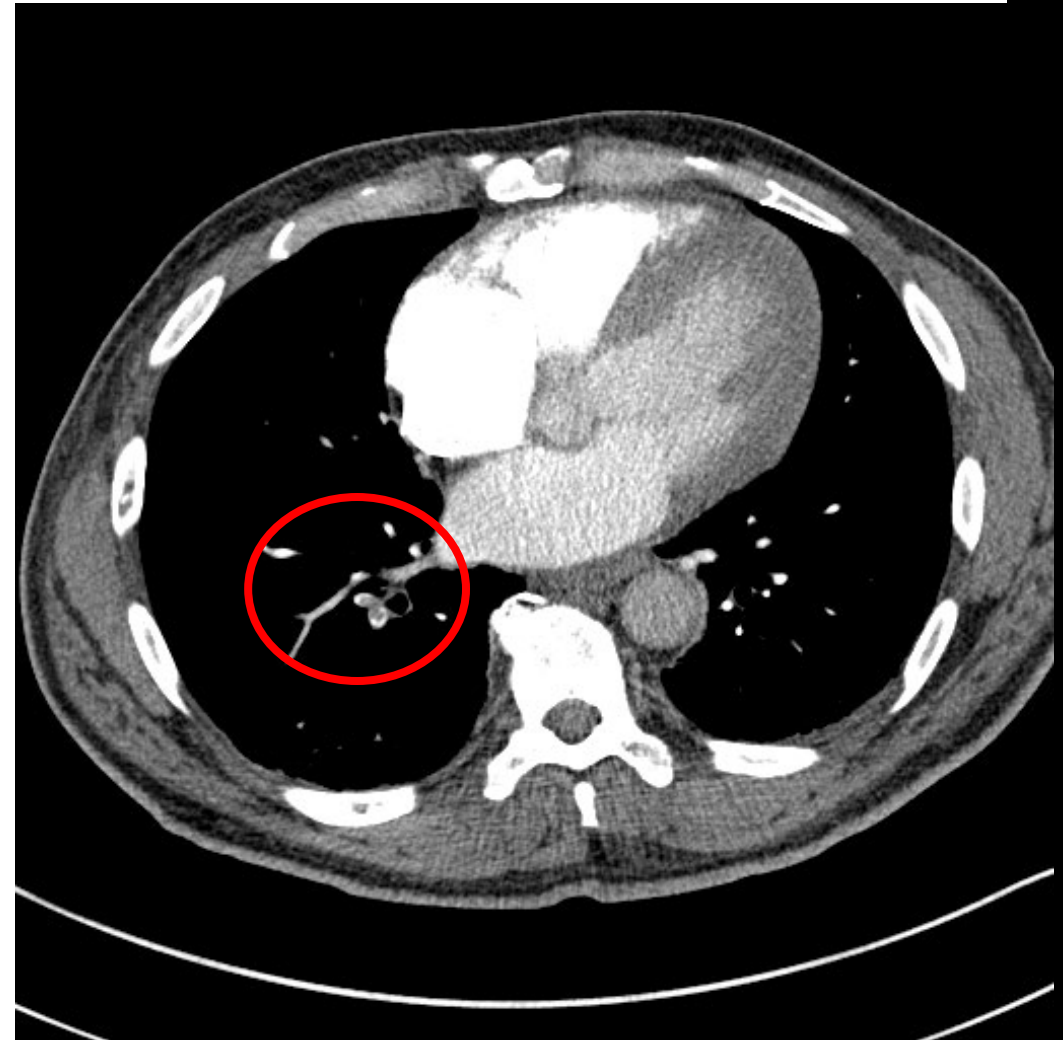
(*J Vasc Surg Venous Lymphat Disord* 2021;9:1361-70.)

• **Objective:**

To assess the incidence of DVT and PE in COVID-19 hospitalized patients in comparison with a matched cohort with similar cardiovascular risk factors, as well as the impact of DVT/PE on hospital course

RESULTS

- Total of 13,310 patients with COVID-19 infection (03/20-09/20)
- 915 (6.9%) were hospitalized
- Mean age: 60.8 ± 17.0 years
- 396 (43.3%) female patients
- **82 (9.0%) DVT/PE**



RESULTS

- In 2019: 128,648 hospitalization across the enterprise, 35 DVT/PE for a rate of 0.03%
- 1:1 matching
 - Criteria: age, sex, location of hospitalization, smoking history, DM and CAD
 - On logistic regression analysis:
 - OR=18.0 (95% CI [8.0-51.2]), $p < 0.0001$

RESULTS

Characteristic	No DVT/PE (n=833)	DVT/PE (n=82)	p-value
Mortality, n (%)	63 (7.6)	13 (15.9)	0.017
Intensive Care Unit care, n (%)	230 (27.6)	48 (58.5)	<0.001
Days in intensive care unit, median [IQR]	6.00 [3.00;15.0]	17.0 [5.00;23.0]	<0.001
Length of hospitalization, median [IQR] (days)	6.00 [4.00;10.0]	10.0 [7.00;23.8]	<0.001
Disposition, n (%)			
Home	655 (78.6)	52 (63.4)	0.001
Rehab facility	93 (11.2)	18 (22.0)	
Died in hospital	50 (6.0)	6 (7.3)	
Still hospitalized	35 (4.2)	4 (4.0)	

CONCLUSIONS

- Higher incidence of DVT/PE in COVID-19 hospitalized patients compared with those patients hospitalized pre-pandemic and matched patients for similar comorbidities
- Patients with DVT/PE are at higher risk for mortality, requiring ICU care and dismissal to rehabilitation facilities.
- Patients with DVT/PE have a prolonged ICU stay and overall hospitalization
- Our in-patient anticoagulation protocols have been adjusting to attend to the higher incidence for DVT/PE. However, the number of patients affected with DVT/PE remain high

HOW ABOUT RACIAL DIFFERENCES?

- Review of DVT/PE rate in hospitalized COVID-19 patients from 03/20 to 05/21 at the MC – Florida campus
- 876 patients and 40.5% women
- Age: 64.4±16.2 years
- Races:
 - 694 (79.2%) white
 - 111 (12.7%) Black/African American
 - 48 (5.5%) Asian and
 - 23 (2.6%) Other



RESULTS

- Incidence of DVT/PE: 8.7%
- Sign. Different among races: (p=0.03)
 - 18 (16.2%) Blacks/African Americans
 - 5 (10.4%) Asians
 - 52 (7.5%) Whites
 - 1 (4.4%) Other

Table II. Hospitalization outcomes in COVID-19 positive patients according to race

Outcome	White (n=694)	Black/African American (n=111)	Asian (n=48)	Other (n=23)	p-value
Length of hospitalization (median [IQR]), days	5.0 [4.0;8.75]	6.0 [4.0;9.5]	6.0 [4.0;10.0]	5.0 [4.0;8.75]	0.33
Need for intensive care unit (ICU) stay, n (%)	98 (14.1)	18 (16.2)	12 (25.0)	2 (8.7)	0.20
Readmission, n (%)	32 (4.6)	2 (1.8)	1 (2.1)	1 (4.4)	0.52
Mortality, n (%)	41 (6.4)	3 (3.1)	1 (2.2)	2 (11.1)	0.29
Acute kidney injury, n (%)	151 (21.8)	40 (36.0)	7 (14.6)	7 (30.4)	0.003
Deep venous thrombosis/pulmonary embolism, n (%)	52 (7.5)	18 (16.2)	5 (10.4)	1 (4.4)	0.03



Table III. Multivariate regression analysis for acute kidney injury and DVT/PE

DVT/PE					
Variable	Level	Pr > Chi-Square	Odds Ratio	Lower 95% CI	Upper 95% CI
Race	Asian versus white	0.4	1.4	0.44	3.79
	Black versus white	0.03	2.0	1.0	3.8
	Other versus white	0.5	0.61	0.03	3.0
BMI	Continuous variable	0.2	0.98	0.95	1.0
Acute kidney injury	<u>Yes</u> versus No	0.1	1.4	0.78	2.4
Hemoglobin	Continuous variable	0.3	0.97	0.87	1.0
D-dimer	Continuous variable	<0.0001	1.1	1.1	1.2
Acute kidney injury					
Variable	Level	Pr > Chi-Square	Odds Ratio	Lower 95% CI	Upper 95% CI
Race	Asian versus white	0.2	0.5	0.2	1.2
	Black versus white	0.02	1.7	1.1	2.7
	Other versus white	0.3	1.6	0.6	4.0
BMI	Continuous variable	0.02	1.0	0.96	1.0
Hemoglobin	Continuous variable	<0.0001	0.86	0.8	0.9
D-dimer	Continuous variable	0.02	1.04	1.0	1.1

CONCLUSION

- In our single-center case series, we found a higher incidence of DVT/PE and AKI among Black/African American patients.
- Heightened awareness of these disparities in DVT/PE risk may allow for targeted interventions in this high-risk COVID-19 hospitalized population

Yield of Head Imaging in Ambulatory and Hospitalized Patients With SARS-CoV-2: A Multi-Center Study of 8675 Patients

Melanie R. F. Greenway, MD¹ , Young Erben, MD², Josephine F. Huang, MD¹, Jason L. Siegel, MD^{1,3,4}, Christopher J. Lamb MD^{1,5}, Mohammed K. Badi, MBBS^{1,6}, Amra Sakusic MD^{1,6}, Neethu Gopal, MBBS¹ , James F. Meschia, MD¹, and Michelle P. Lin, MD, MPH¹

The Neurohospitalist
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• Objective

To describe the neurological and cerebrovascular findings in patients with COVID-19, who underwent head imaging in ambulatory and inpatient settings

RESULTS

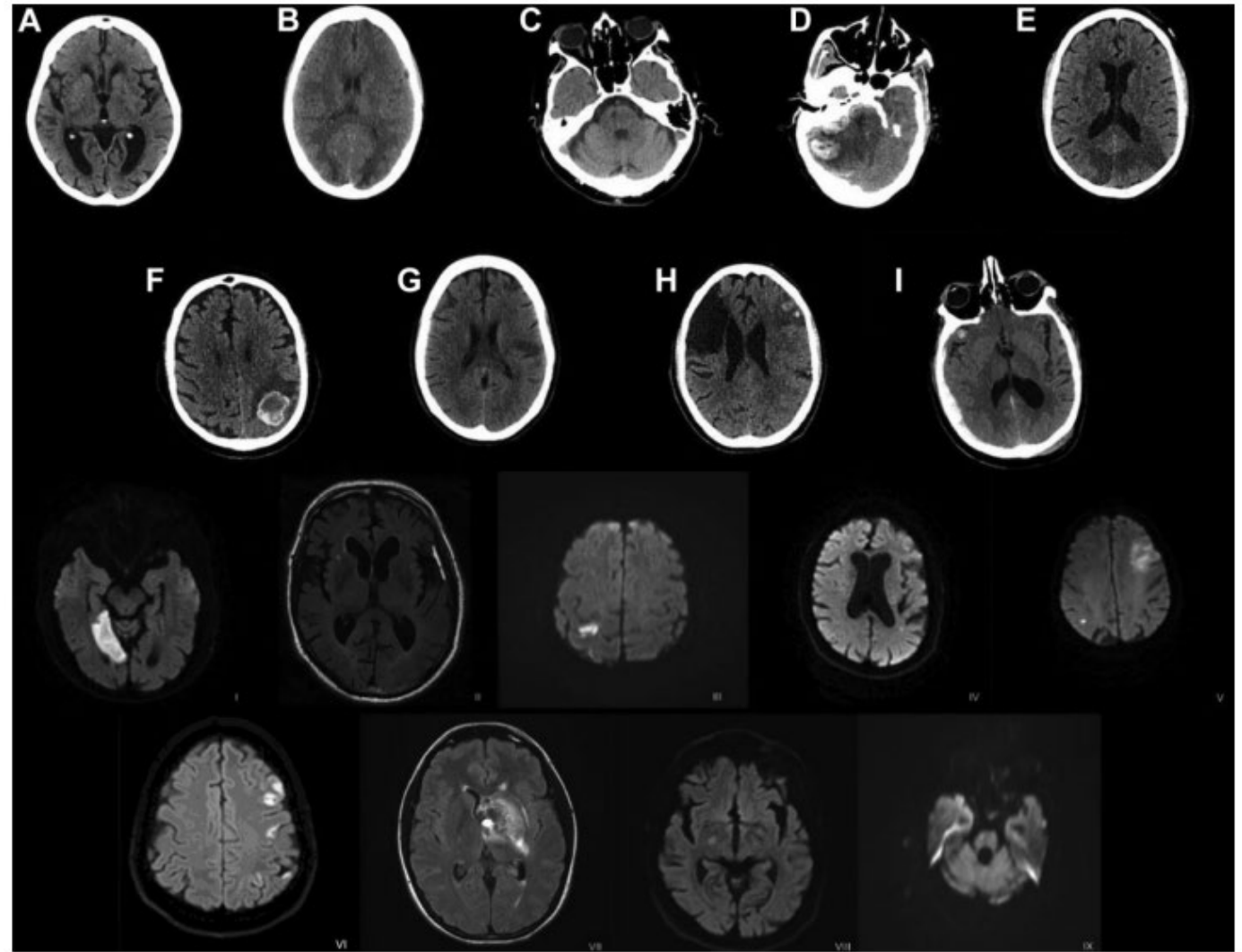
- Of 8,675 patients, 180 (2.07%) had head imaging from 03/20-07/20.
- Mean age: 62±19 years
- Indications for head imaging:
 - 34.4% headache, 33.4% encephalopathy, 16.7% focal neurologic symptoms and 13.9% trauma

RESULTS

- 86.1% normal head imaging
- 8 pts had acute infarct
- 6 pts acute intracranial hemorrhage
- 5 subacute infarct
- 1 Posterior reversible encephalopathy syndrome

STROKES

- 6 cryptogenic
- 3 other causes
- 2 small vessel stroke
- 1 large vessel stroke
- 1 cardioembolic event



CONCLUSIONS

- Rate of head imaging is low and the most common indication was headache and encephalopathy
- Cerebrovascular events occurred rarely and cryptogenic stroke were most common

Serum neurofilament light protein correlates with unfavorable clinical outcomes in hospitalized patients with COVID-19

Mercedes Prudencio^{1,2†}, Young Erben^{3†}, Christopher P. Marquez⁴, Karen R. Jansen-West¹, Camila Franco-Mesa³, Michael G. Heckman⁵, Launia J. White⁵, Judith A. Dunmore¹, Casey N. Cook^{1,2}, Meredith T. Lilley¹, Yuping Song¹, Caroline F. Harlow⁴, Björn Oskarsson⁶, Katharine A. Nicholson⁷, Zbigniew K. Wszolek⁶, LaTonya J. Hickson⁸, John C. O'Horo^{9,10}, Jonathan B. Hoyne⁴, Tania F. Gendron^{1,2}, James F. Meschia^{6*}, Leonard Petrucelli^{1,2*}

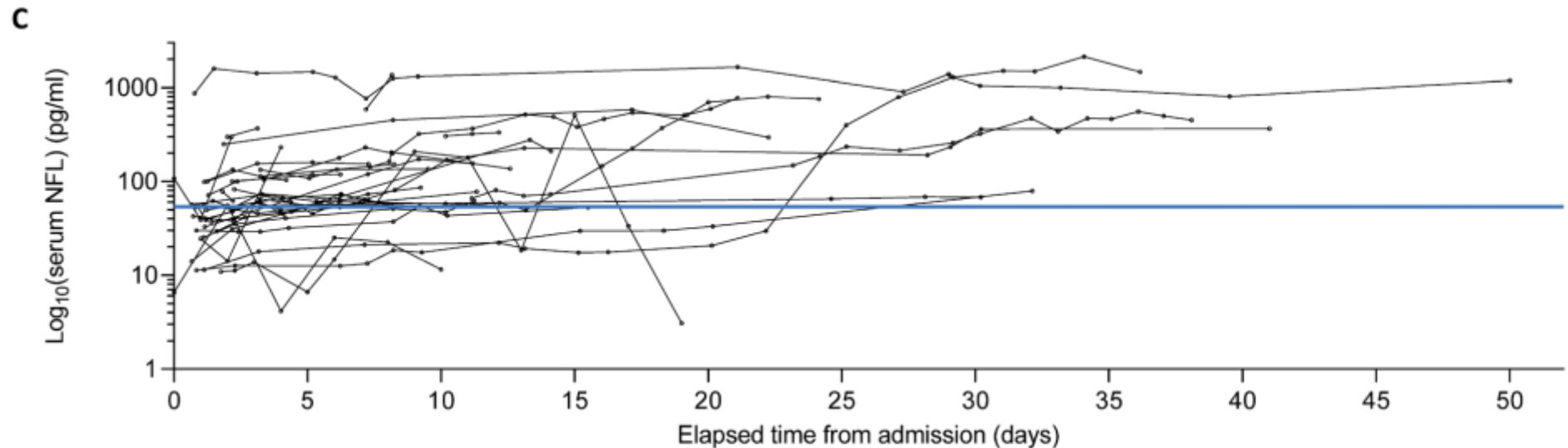
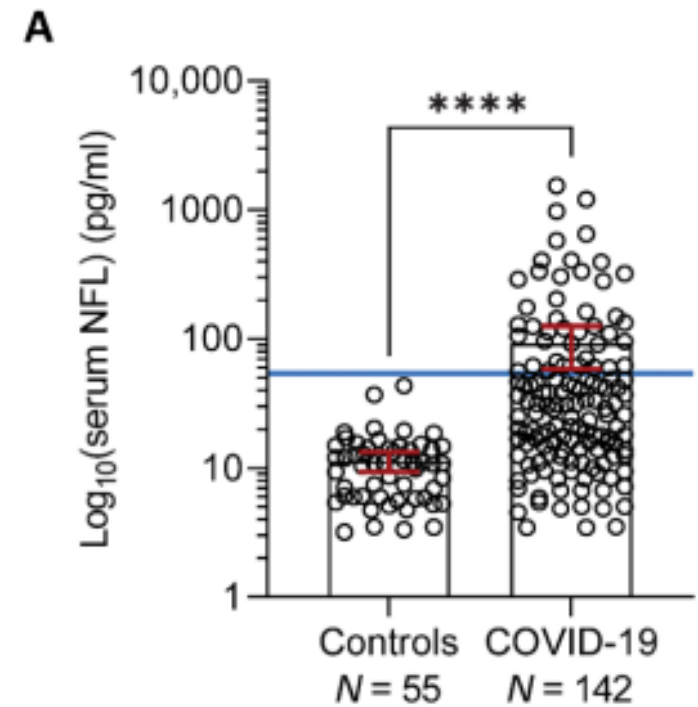
Sci. Transl. Med. 13, eabi7643 (2021)

• Objective

Neurofilament light chain (NFL), a neuroaxonal injury marker... could it predict the extent of neuronal damage in a cohort of 142 hospitalized COVID-19 patients?

RESULTS

- NFL was elevated in the serum of patients with COVID-19 vs controls
- NFL levels are higher after 5-7d and remain high variably



RESULTS

Association examined	Median (minimum, maximum) NFL or no. (%) for the given group		Association measure	Unadjusted analysis		Adjusting for age, sex, BMI, and CKD	
	No intubation (N = 112)	Intubation (N = 30)		Estimate (95% CI)	P value	Estimate (95% CI)	P value
Association between intubation and							
Mean NFL per patient	19.7 (3.4, 972.7)	107.4 (15.9, 1538.4)	Regression coefficient	1.61 (1.16, 2.06)	<0.001	1.66 (1.24, 2.07)	<0.001
Association between ICU admission and							
Mean NFL per patient	18.7 (3.4, 972.7)	52.2 (4.8, 1538.4)	Regression coefficient	1.10 (0.69, 1.50)	<0.001	1.13 (0.76, 1.49)	<0.001
Association between LOS and							
Mean NFL per patient	15.9 (3.4, 972.7)	47.8 (4.8, 1538.4)	Regression coefficient	0.81 (0.60, 1.01)	<0.001	0.74 (0.55, 0.93)	<0.001
Association between mRS at discharge and							
Mean NFL per patient	19.5 (3.4, 405.3)	91.9 (17.9, 1538.4)	Regression coefficient	0.56 (0.46, 0.67)	<0.001	0.54 (0.42, 0.66)	<0.001
Minimum NFL per patient	14.7 (2.2, 304.9)	47.8 (3.1, 1538.4)	Regression coefficient	0.49 (0.38, 0.61)	<0.001	0.45 (0.33, 0.58)	<0.001
Maximum NFL per patient	21.4 (3.4, 779.0)	105.0 (18.1, 2131.0)	Regression coefficient	0.60 (0.48, 0.71)	<0.001	0.58 (0.46, 0.71)	<0.001
NFL value >25th percentile*	71 (65.1%)	33 (100.0%)	Odds ratio	3.67 (2.17, 6.22)	<0.001	3.00 (1.71, 5.29)	<0.001
NFL value >75th percentile	16 (14.7%)	18 (54.5%)	Odds ratio	2.27 (1.66, 3.11)	<0.001	3.04 (2.02, 4.58)	<0.001

Table 4. Comparison of serum NFL concentrations according to COVID-19 treatment. Regression coefficients, 95% CIs, and *P* values result from linear regression models, where NFL was the dependent variable. Regression coefficients are interpreted as the difference in mean NFL concentration (on the natural logarithmic scale) between patients who had the given treatment and patients who did not have the given treatment. *P* values <0.0063 were considered as statistically significant after applying a Bonferroni correction for multiple testing.

COVID-19 treatment	N	Median (minimum, maximum) NFL concentration	Adjusting for time from admission to blood draw		Adjusting for age, sex, BMI, and time from admission to blood draw	
			Regression coefficient (95% CI)	<i>P</i> value	Regression coefficient (95% CI)	<i>P</i> value
Monoclonal antibody treatment						
First NFL value per patient						
No treatment	125	22.5 (2.9, 1538.4)	1.00 (reference)	N/A	1.00 (reference)	N/A
Treatment	17	20.0 (3.5, 647.3)	-0.34 (-0.91, 0.23)	0.29	-0.47 (-1.00, 0.05)	0.074
Final NFL value per patient						
No treatment	107	31.1 (2.2, 1538.4)	1.00 (reference)	N/A	1.00 (reference)	N/A
Treatment	35	33.4 (3.1, 1465.8)	-0.38 (-0.85, 0.09)	0.12	-0.39 (-0.84, 0.07)	0.094
Remdesivir treatment						
First NFL value per patient						
No treatment	92	21.2 (2.9, 872.3)	1.00 (reference)	N/A	1.00 (reference)	N/A
Treatment	50	23.7 (3.4, 1538.4)	-0.25 (-0.68, 0.18)	0.25	-0.24 (-0.64, 0.15)	0.23
Final NFL value per patient						
No treatment	42	32.3 (3.4, 1359.7)	1.00 (reference)	N/A	1.00 (reference)	N/A
Treatment	100	32.1 (2.2, 1538.4)	-0.47 (-0.89, -0.05)	0.029	-0.56 (-0.97, -0.15)	0.008
Dexamethasone treatment						
First NFL value per patient						
No treatment	103	21.4 (2.9, 1538.4)	1.00 (reference)	N/A	1.00 (reference)	N/A
Treatment	39	22.5 (3.4, 872.3)	0.27 (-0.16, 0.69)	0.22	0.26 (-0.13, 0.64)	0.19
Final NFL value per patient						
No treatment	66	29.3 (2.2, 1538.4)	1.00 (reference)	N/A	1.00 (reference)	N/A
Treatment	76	37.8 (3.1, 1465.8)	-0.11 (-0.51, 0.29)	0.59	-0.08 (-0.46, 0.31)	0.69
Convalescent plasma treatment						
First NFL value per patient						
No treatment	119	20.3 (2.9, 1538.4)	1.00 (reference)	N/A	1.00 (reference)	N/A
Treatment	23	33.4 (9.4, 647.3)	-0.24 (-0.82, 0.35)	0.43	-0.25 (-0.78, 0.28)	0.35
Final NFL value per patient						
No treatment	107	27.1 (2.2, 1538.4)	1.00 (reference)	N/A	1.00 (reference)	N/A
Treatment	35	40.0 (3.1, 1186.2)	-0.01 (-0.46, 0.45)	0.98	-0.02 (-0.41, 0.45)	0.93

CONCLUSIONS

- Patients with COVID-19 may experience neuroaxonal injury and may be at risk for long-term neurological sequelae
- Neuroaxonal injury should be considered as an outcome in acute pharmacotherapeutic trials for COVID-19

COVID-19 AND VASCULAR DISEASE



Telemedicine in vascular surgery during the coronavirus disease-2019 pandemic: A multisite healthcare system experience

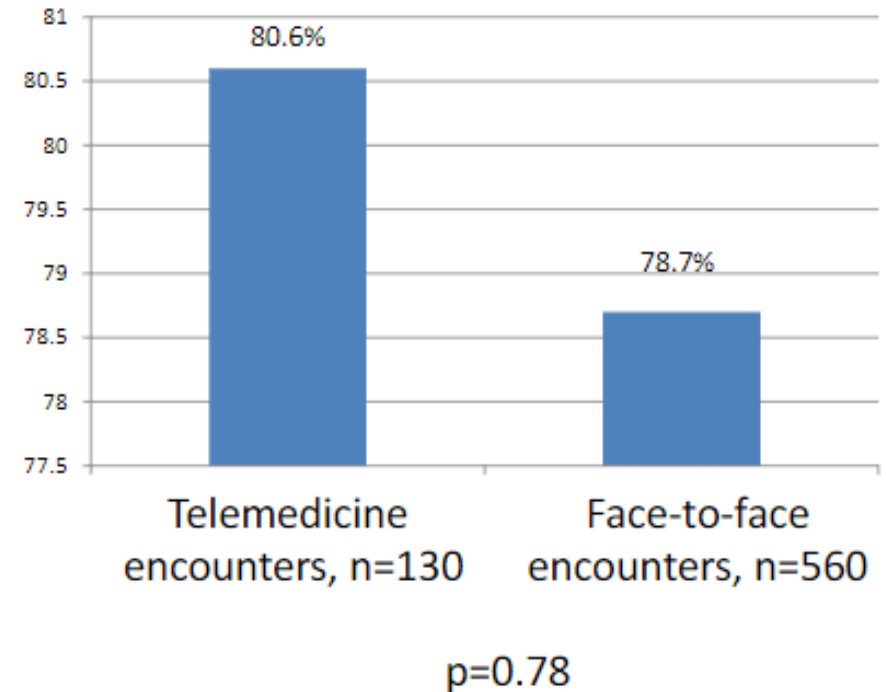
Young Erben, MD,^a Camila Franco-Mesa, MD,^a Osman Hamid, MD,^a Michelle Lin, MD,^b William Stone, MD,^c Andrew J. Meltzer, MD,^c Wendy Hattery,^d Arta Palaj, MBA,^e Laura L. Wilshusen,^f Tafi L. Vista,^f Manju Kalra, MD,^g Houssam Farres, MD,^a Thomas C. Bower, MD,^g Randall R. De Martino, MD,^g Josephine F. Huang, MD,^b James F. Meschia, MD,^b and Sarvam P. TerKonda, MD,^{d,h} *Jacksonville, Fla; Scottsdale, Ariz; and Rochester, Minn*

(J Vasc Surg 2021;74:1-4.)

- **Objective**
- To assess the introduction of telemedicine as an alternative to the traditional face-to-face encounters with vascular surgery patients during COVID-19 pandemic

RESULTS

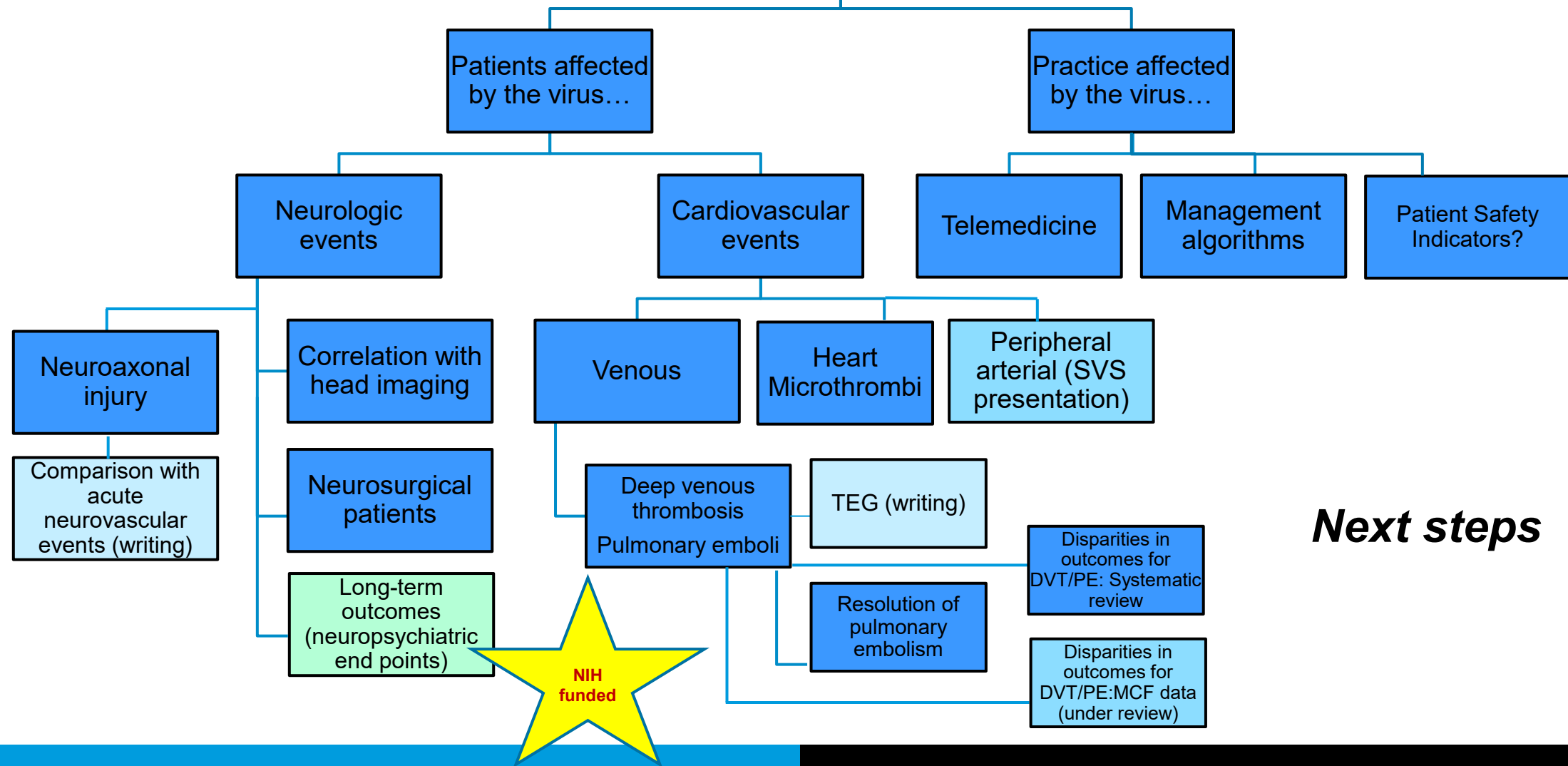
- 6262 encounters during 01/20-08/20
 - 790 telemedicine
 - No difference among campuses
 - Rating of encounter:
 - Telemedicine 80.6% as very good
 - Face-to-face encounters 78.7% as very good



CONCLUSION

- Although telemedicine has been implemented rapidly as an alternative mode of patient visit/interaction because of the pandemic; the high-quality patient reported satisfaction remains unchanged.

COVID-19



Next steps

MENTORS/SPONSORS/COLLABORATORS



TB-12

- In 2000, he was the 199th pick during the NFL draft
- His success could be attributed to GRIT (“perseverance and passion for long-term goals”)**

“Working with people you like, a tribe with a common goal, would make your professional life far happier than any accolade, salary, or company’s prestige. You need to do the work you love at a place you love with people you love.”





ERBEN.YOUNG@MAYO.EDU



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Thank you
Q&A