337. SARS-CoV-2 Viral Load Does Not Predict Incident Venous Thromboembolism in COVID-19

Simon Pollett, MBBS[1]; Benjamin Wier, DVM[1]; Stephanie A. Richard, PhD, MHS[2]; Anthony C. Fries, PhD[3]; Ryan C. Maves, MD[4]; Ryan C. Maves, MD[4]; Gregory Utz, MD[1]; Tahaniyat Lalani, MBBS[5]; Rupal Mody, MD[6]; Anuradha Ganesan, MBBS, MPH[7]; Rhonda E. Colombo, MD, MHS[8]; Chris Colombo, MD[9]; David A. Lindholm, MD[10]; David A. Lindholm, MD[10]; Cristian Madar, MD[11]; Sharon Chi, MD[12]; Nikhil Huprikar, MD[13]; Derek Larson, MD[14]; Samantha Bazan, DNP, MS[15]; Ann Scher, PhD[1]; Jennifer Rusiecki, PhD[1]; Celia Byrne, PhD[16]; Katrin Mende, PhD[17]; Mark P. Simons, Ph.D., MSPH[1]; David Tribble, M.D., DrPH[1]; Brian Agan, MD[18]; Timothy Burgess, MD, MPH[12]; [1]Uniformed Services University of the Health Sciences, Bethesda, Maryland; [2]Infectious Disease Clinical Research Program, Department of Preventive Medicine and Biostatistics, Uniformed Services University of the Health Sciences, Bethesda, MD and Henry M. Jackson Foundation, Bethesda, MD, Bethesda, Maryland; [3]United States Air Force School of Aerospace Medicine, Wright-Patterson AFB, Ohio; [4]Naval Medical Center San Diego, San Diego, CA and Infectious Disease Clinical Research Program, Bethesda, MD, San DIego, California; [5]IDCRP, HJF, and NMCP, Bethesda, Maryland; [6]WBAMC, El Paso, Texas; [7]Infectious Disease Clinical Research Program and the Henry M. Jackson Foundation for the Advancement of Military Medicine and Walter Reed National Military Medical Center, Bethesda, MD; [8]Madigan Army Medical Center, Tacoma, WA, Infectious Disease Clinical Research Program, Bethesda, MD, and Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc., Bethesda, MD, Tacoma, Washington; [9]Madigan Army Medical Center, Joint Base Lewis-McChord, Washington; [10]Uniformed Services University of the Health Sciences; Brooke Army Medical Center, San Antonio, TX; [11]Tripler Army Medical Center, Tripler Army Medical Center, Hawaii; [12]Infectious Disease Clinical Research Program, Bethesda, Maryland; [13]Walter Reed National Military Medical Center (WRNMMC), Bethesda, Maryland; [14]Fort Belvoir Community Hospital Infectious Disease, Fort Belvoir, Virginia; [15]Carl R. Darnall Army Medical Center, Fort Hood, Texas; [16]USUHS, Bethesda, Maryland; [17]Infectious Disease Clinical Research Program, Bethesda, MD, The Henry M. Jackson Foundation, Bethesda, MD, and Brooke Army Medical Center, Fort Sam Houston, TX, San Antonio, TX; [18]Infectious Disease Clinical Research Program, USU/HJF, Bethesda, Maryland

The EPICC Study Group

Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. The risk factors of venous thromboembolism (VTE) in COVID-19 warrant further study. We leveraged a cohort in the Military Health System (MHS) to identify clinical and virological predictors of incident deep venous thrombosis (DVT), pulmonary embolism (PE), and other VTE within 90-days after COVID-19 onset.

Methods. PCR or serologically-confirmed SARS-CoV-2 infected MHS beneficiaries were enrolled via nine military treatment facilities (MTF) through April 2021. Case characteristics were derived from interview and review of the electronic medical record (EMR) through one-year follow-up in outpatients and inpatients. qPCR was performed on upper respiratory swab specimens collected post-enrollment to estimate SARS-CoV-2 viral load. The frequency of incident DVT, PE, or other VTE by 90-days post-COVID-19 onset were ascertained by ICD-10 code. Correlates of 90-day VTE were determined through multivariate logistic regression, including age and sampling-time-adjusted log10-SARS-CoV-2 GE/reaction as *a priori* predictors in addition to other demographic and clinical covariates which were selected through stepwise regression.

Results. 1473 participants with SARS-CoV-2 infection were enrolled through April 2021. 21% of study participants were inpatients; the mean age was 41 years (SD = 17.0 years). The median Charlson Comorbidity Index score was 0 (IQR = 0 - 1, range = 0 - 13). 27 (1.8%) had a prior history of VTE. Mean maximum viral load observed was 1.65 x 10^7 genome equivalents/reaction. 36 (2.4%) of all SARS-CoV-2 cases (including inpatients and outpatients), 29 (9.5%) of COVID-19 inpatients, and 7 (0.6%) of outpatients received an ICD-10 diagnosis of any VTE within 90 days after COVID-19 onset. Logistic regression identified hospitalization (aOR = 11.1, p = 0.003) and prior VTE (aOR = 6.2 , p = 0.009) as independent predictors of VTE within 90 days of symptom onset. Neither age (aOR = 1.0, p = 0.50), other demographic covariates, other comorbidities, nor SARS-CoV-2 viral load (aOR = 1.1, p = 0.60) were associated with 90-day VTE.

Conclusion. VTE was relatively frequent in this MHS cohort. SARS-CoV-2 viral load did not increase the odds of 90-day VTE. Rather, being hospitalized for SARS-CoV-2 and prior VTE history remained the strongest predictors of this complication.

Disclosures. **Simon Pollett, MBBS**, **Astra Zeneca** (Other Financial or Material Support, HJF, in support of USU IDCRP, funded under a CRADA to augment the conduct of an unrelated Phase III COVID-19 vaccine trial sponsored by AstraZeneca as part of USG response (unrelated work)) **Ryan C. Maves, MD**, **EMD Serono** (Advisor or Review Panel member)**Heron Therapeutics** (Advisor or Review Panel member) **David A. Lindholm, MD**, American Board of Internal Medicine (Individual(s) Involved: Self): Member of Auxiliary R&D Infectious Disease Item-Writer Task Force. No financial support received. No exam questions will be disclosed ., Other Financial or Material Support **David Tribble, M.D., DrPH**, **Astra Zeneca** (Other Financial or Material Support, HJF, in support of USU IDCRP, funded under a CRADA to augment the conduct of an unrelated Phase III COVID-19 vaccine trial sponsored by AstraZeneca as part of USG response (unrelated work))

338. Multicenter Evaluation of Superinfection Occurrence and Impact on Clinical Outcomes in Patients with COVID-19

Taryn A. Eubank, PharmD[1]; Katherine Perez, PharmD, BCIDP[2]; William L. Musick, PharmD[2]; Kevin W. Garey, Pharm.D., M.S., FASHP[3]; [1]University of Houston, Houston, Texas; [2]Houston Methodist Hospital, Houston, Texas; [3]University of Houston College of Pharmacy, Houston, Texas

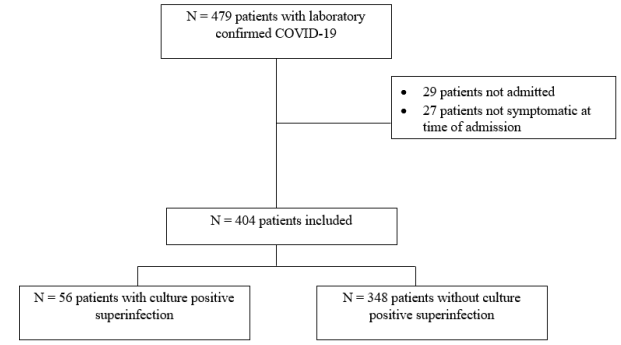
Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. The coronavirus disease 2019 (COVID-19), caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), spread globally throughout late 2019. During this pandemic, concern for bacterial and fungal superinfections has been present during the treatment of these patients.

Methods. Hospitalized, adult patients with laboratory confirmed and symptomatic COVID-19 disease admitted between March 12, 2020 and May 31, 2020 were eligible for inclusion in this study. Data was obtained from electronic medical records and the hospital system's clinical surveillance program including demographics, comorbidities, hospitalization dates, laboratory values, mechanical ventilation, positive blood and respiratory cultures, treatment administration for COVID-19 as defined by the system's fluid treatment algorithm, and discharge disposition. Outcomes of this analysis include overall bacterial and fungal superinfection occurrence rate within 28 days of admission, patient characteristics that correlate with a higher risk of a superinfection, and the effect on 28-day mortality.

Patient Population

Figure 1.



Flow diagram of patient inclusion.

Results. A total of 404 patients were included in the study analyses of which 56 (13.9%) had a documented superinfection within 28-days from admission. The most common superinfection organisms observed were *Staphylococcus* spp. (36.9%), *Candida* spp. (16.7%), and *Klebsiella* spp. (13.1%). Mortality was significantly higher in patients with superinfections (12.1% vs 5.8%, $p < 0.001$). To best assess characteristics that place patients at a higher risk of superinfection, a backwards, stepwise, multivariable logistic regression was performed. Black ethnicity, chronic kidney disease, intensive care unit (ICU) upon admission, lymphocytopenia, and receipt of tocilizumab were found to more likely have a superinfection within 28-days from admission.

Baseline Characteristics

Demographics	Superinfection Present (n=56)	No Superinfection Present (n=348)	p value
Baseline Demographics			
Age (years), median	65	58	0.004
Sex (male)	50.0%	53.6%	0.246
Ethnicity			
Asian	7.1%	5.2%	0.546
Black	39.3%	26.4%	0.047
Caucasian	51.8%	60.9%	0.196
Native American	1.8%	2.0%	0.910
Other	0.0%	0.6%	0.570
Declined/Unavailable	0.0%	4.9%	0.322
BMI (body mass index), median	31.6	31.0	0.601
Comorbidities			
Diabetes	64.3%	37.1%	<0.001
Hypertension	78.6%	58.3%	0.004
Heart failure	32.1%	13.5%	<0.001
Chronic Pulmonary Disease	17.9%	6.3%	0.003
History of Nicotine or Tobacco Use	23.2%	18.4%	0.394
Malignancy	7.1%	7.5%	0.931
Chronic Kidney Disease	28.6%	12.1%	0.001
Chronic Liver Disease	10.7%	9.5%	0.772
Duration of Symptoms Prior to Admission (days)	7.8	7.7	0.960
ICU upon Admission	56.6%	18.1%	<0.001
Ordinal Scale Score on Admission, range	2.4 (2 – 5)	2.1 (2 – 4)	<0.001
Vitals on Admission			
Heart Rate, median	101.4	94.6	0.016
Respiratory Rate, median	23.3	21.0	0.002
Temperature (Fahrenheit), median	99.7	99.4	0.180
SpO2 (%), median	91.2	95.1	<0.001
Systolic Blood Pressure (mm Hg), median	138.9	134.7	0.189
Diastolic Blood Pressure (mm Hg), median	74.5	74.8	0.429
Baseline Biomarkers			
D-dimer, mcg/mL (n=282)	2.8	1.7	0.040
C-reactive Protein, mcg/mL (n=291)	21.0	9.8	0.006
Ferritin, ng/mL (n=289)	1129.8	1179.8	0.926
LDH, U/L (n=286)	662.6	333.4	0.005
Procalcitonin, ng/mL (n=140)	1.7	2.3	0.776
IL-6 , pg/mL(n=227)	226.6	109.1	0.041
Lymphocytes (n=402), median	11.5%	17.9 %	<0.001
COVID-19 Treatment			
Remdesivir	32.1%	29.3%	0.667
Tocilizumab	55.4%	25.3%	<0.001
Convalescent Plasma	17.9%	19.3%	0.805