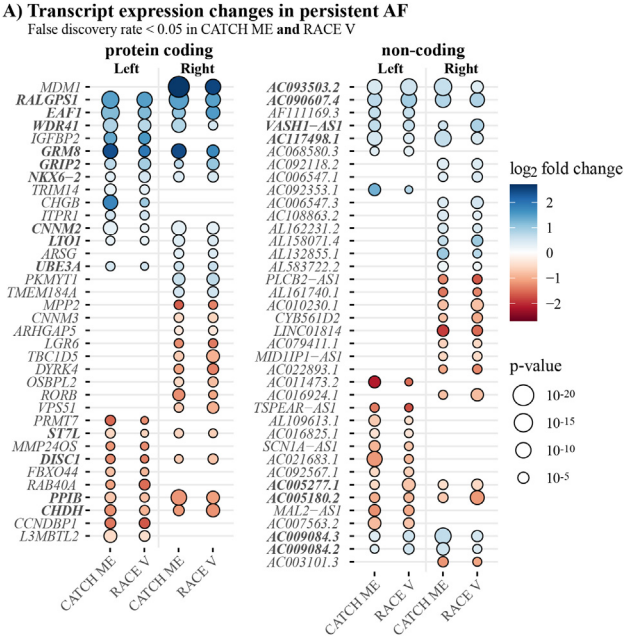
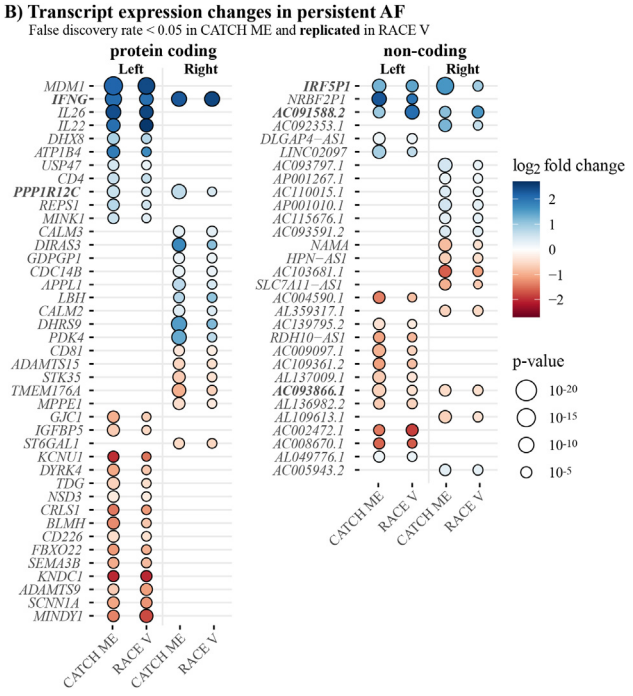
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

between atrial tissue samples from well-characterized patients with persistent AF and patients without a history of AF in two independent patient cohorts.
Methods: Poly-A tailed RNA molecules, extracted from total RNA, from left and right atrial appendage tissue samples from independent discovery and replication cohorts CATCH ME (n=142) and RACE V (n=82) were sequenced, and analyzed according to patient AF history. Analyses were performed stratified by atrial side, adjusting for age, sex, heart failure and a combination of eleven clinical characteristics determined by principal component analysis. Transcripts were considered DE in CATCH ME if their fold change reached transcriptome-wide significance (false discovery rate (FDR) < 0.05). DE transcripts were replicated in RACE V with a concordant direction of effect and a within-set FDR < 0.05.
Results: Persistent AF was associated with 184 left atrial DE transcripts in CATCH ME of which 85 (46%) were replicated in RACE V, and with 208 right atrial DE transcripts in CATCH ME of which 86 (41%) were replicated in RACE V. Overall, 26 transcripts were discovered and replicated in both atria. Non-replicated transcripts often exhibited concordant direction of effect (left: 78%, right: 83%). Replicated transcripts consisted of protein coding genes, antisense and non-coding RNAs. Protein coding genes showed involvement in pathways linking persistent AF to cardiomyocyte structure, conduction properties, fibrosis, inflammation, molecule trafficking, and endothelial dysfunction.
Conclusion: RNA sequencing of human atrial tissue samples identified many transcripts associated with persistent AF in left and/or right atria, discovered and replicated using two independent cohorts. These consistent findings of AF-induced changes provide a starting point for targeted proteomic analysis and single-nucleus sequencing to further unravel the molecular mechanisms underlying AF and the progression to persistent AF, and biomarker development to quantify AF progression and enable precision medicine in individual patients.





ABSTRACT CE-541:
Arriving at a better understanding of COVID-19 and arrhythmias

Saturday, April 30, 2022
1:00 PM - 2:00 PM

CE-541-01

OUTCOMES IN PATIENTS WITH COVID-19 COMPLICATED BY HIGH GRADE ATRIOVENTRICULAR BLOCK

Ivan Mendoza MD; Karina Gonzalez Carta MD, MS; Heliodoro A. Rodriguez MD; Igor Morr; Elirub de Lourdes Rojas Gimon; yolimar meza-mendez; Elias Urbaez; Susana Blanco and Ivan Mendoza

Background: There is growing evidence showing that arrhythmias are one of the major complications of COVID-19.However, there are currently only a few case reports of high-grade atrioventricular block (AVB). We sought to describe a large case series of AVB as a complication of COVID-19.
Objective: The purpose of the current study is to describe a large case series of AVB as a complication of COVID-19.
Methods: We included a series of twenty-five (25)consecutive patients with confirmed COVID-19, who developed advanced AVB in a prospective observational multi-center study. Patients underwent clinical, laboratory evaluation, Holter, telemetry, Echocardiogram, Chest X-Ray, chest CT scan and cardiac MRI
Results: Of the 25 patients 13 were male with a mean age of 62+-13 years. 19 developed complete AVB, one a 3:1 AVB and five 2:1 AVB. None of the patients had a history of cardiac arrhythmia. AVB was not related to medication or intubation. Eighteen patients developed AVB during their hospitalization for COVID-19 and 7 after the first month as a late sequela. Five patients were asymptomatic, 6 presented syncope, seven dyspnea and seven dizziness. Eleven patients presented reverse AVB early by a high dose of corticosteroid in all of them, and

combined with colchicine in 4 cases, with no recurrent episodes. 13 patients required a permanent pacemaker for persistent conduction defect (52%) and one died of ventricular fibrillation without pacemaker

Conclusion: Advanced AVB could be a complication of COVID-19. The conduction disturbance was reversed by corticosteroids with or without colchicine in eleven of twenty five cases (44%)The resolution with corticosteroids of the advanced AVB in these patients could reflect the transient nature of the viral infection and the inflammatory response associated with it in some patients. 13 patients required a pacemaker(52%). Physicians should be aware of this complication.

CE-541-02

POST-COVID AND POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME

Justin Haloot DO; Mahmoud Kabbani; Monica Verduzco-Gutierrez; Ratna Bhavaraju-Sanka and Jayasree Pillarisetti MD, FHRS

Background: Persistence of symptoms beyond acute coronavirus disease 2019 (COVID-19) is termed post-acute sequelae of SARS-CoV-2 (PASC) and include neurological, pulmonary, cardiac, psychiatric, and functional impairment. Most common cardiac sequelae appear to be postural orthostatic tachycardia syndrome (POTS). The incidence, presentation and long-term outcomes of POTS as a post-COVID condition is unknown.

Objective: To study the presentation, management, and outcome of Post-COVID POTS.

Methods: We conducted a retrospective study of all patients who were diagnosed with POTS at Cardiology, Neurology, and Rehabilitation Post-COVID clinic after COVID-19 infection between March 1, 2020, and November 1, 2021, at the University of Texas Health San Antonio. We examined COVID history, POTS diagnosis, management, and outcomes of Post-COVID POTS patients.

Results: The cohort comprised of 40 patients who were diagnosed with Post-COVID POTS. Mean age was 40.98 $\pm$ 11 years with a mean BMI of 32.32 $\pm$ 9.70. Females comprised of 97.5% of the patients. Symptoms began 4-6 weeks after COVID and included fatigue (75%), palpitations (70%), lightheadedness (47.5%), cognitive decline (50%), mental clouding (50%), dyspnea (50%), memory loss (47.5%), and syncope (2.5%). Patients were diagnosed with Post-COVID POTS an average of 219.9 $\pm$ 156.4 days after the diagnosis of COVID-19. Tachycardia upon standing or activity occurred with a mean change in heart rate of 42.48 $\pm$ 29.37 bpm. Along with increasing water intake, salt intake, rehabilitation, and lower body compression, initial management included beta blockers (30%), fludrocortisone (5%), and midodrine (5%). At 6 months, patients still had persistent symptoms with 65.52% of patients noting some improvement, 31.0% with stable symptoms, and 3.45% with worsening symptoms. Physical therapy and rehabilitation were reported as the most effective treatment in the mild improvement group. At 6 months disabling symptoms persisted in 100% of these high functioning women pre-COVID. No patient had full recovery.

Conclusion: Post-COVID POTS is a disabling diagnosis and symptoms persisted even after 6 months of onset. Although physical therapy and rehabilitation seem to have some effect, these patients who were functional pre-COVID are still disabled and none had full recovery.

CE-541-03

OCCURRENCE OF ATRIAL FIBRILLATION AFTER RECEIVING A SARS- COV-2 VACCINE: REPORT FROM CENTERS FOR DISEASE CONTROL AND PREVENTION VAERS DATABASE

Abhishek Maan MD, ScM; Daniel Musikantow MD; Brandon S. Needelman MD; Joshua Lampert MD; Emmanuel Ekanem MD; Jonathan Gandhi MD; Mohit K. Turagam MD; William Whang MD; Srinivas R. Dukkipati MD and Vivek Y. Reddy MD

Background: The COVID-19 pandemic continues to be an ongoing health crisis affecting over 49 million patients in the US. Currently, 3 vaccines have been authorized for use by the US FDA for preventing COVID-19 infection. Although data are accumulating on rare reports of myocarditis, there is little data on atrial fibrillation (AF) after COVID-19 vaccination. In the initial randomized clinical trial of the Moderna vaccine, the incidence of AF was reported to be $<$0.1%, and balanced between the vaccine and placebo groups; but the cohort was relatively young (75% were $<$ 65 years old).

Objective: We sought to assess the associated risk of AF with COVID-19 vaccination.

Methods: We analyzed data from Vaccine Adverse Event Reporting System (VAERS) database, which had categorized self-reported occurrence of AF along with major complications.

Results: Of the total 14,693 individuals who had received at least 1 dose of COVID-19 vaccine and had also reported at least 1 adverse event in VAERS, 23 (0.16%) participants had reported the occurrence of new-onset AF. Of these 23 individuals (mean age = 76.6 $\pm$ 15.7 years; M/F = 14 [61%] / 9 [39%]), 10 (43.5%) had received the Moderna vaccine (mRNA-1273) and 13 (56.5%) had received the Pfizer-BioNTech vaccine. The timing of AF onset after the administration of vaccine dose ranged from 3 hours to 14 days. In 15 of the 23 patients, new-onset AF was the primary reason necessitating emergency room visit. Of these 23 individuals, one had a stroke, and another had a transient ischemic attack.

Conclusion: The temporal association of AF with COVID-19 vaccine administration suggest that there may indeed be a transient increase in AF post-vaccination, albeit at a seemingly low rate. This might reflect a transiently elevated proinflammatory state in conjunction with presence of an underlying electrical and structural substrate. The apparent infrequent nature of development of AF suggests that the vaccine should not be withheld because of concern about developing AF. On the other hand, it seems prudent to i) treat post-vaccine AF conservatively as a potentially reversible event (unless the AF persists late [$>$ 1 month] after vaccination), and ii) inform patients with a history of AF that the hyper-inflammatory state associated with COVID-19 vaccination (as can occur with any vaccine) might transiently trigger AF.

CE-541-04

CARDIAC ARRHYTHMIAS IN POST-ACUTE SEQUELAE OF SARS-COV-2 INFECTION ASSESSED BY AMBULATORY RHYTHM MONITORING

Christopher Hill BA; Shreya Swaminathan BS; Danny Li; Michael J. Peluso MD; Timothy J. Henrich MD; Jeffrey N. Martin MD, MPH; Steven G. Deeks MD; Priscilla Y. Hsue MD and Matthew S. Durstenfeld MD