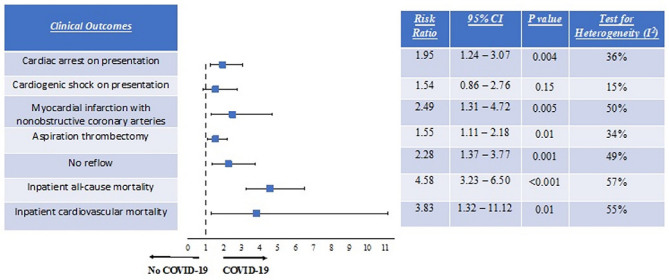
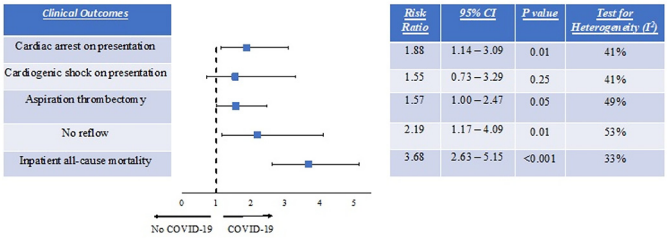
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

(A)



(B)



Background The outcomes of patients with acute coronary syndrome (ACS) and COVID-19 infection are variable. We performed a pooled analysis of studies comparing the outcomes of ACS in patients with COVID-19 versus no COVID-19 infection.

Methods Statistical analysis was performed using Revman V.5.3 and Mantel Haenszel risk ratio. Outcomes studied were 1) in-hospital all-cause and cardiovascular mortality; 2) cardiac arrest on presentation; 3) myocardial infarction with nonobstructive coronary arteries (MINOCA); 4) aspiration thrombectomy use; and 5) no reflow phenomenon.

Results Nine studies (6,664 patients) met the inclusion criteria. Patients with ACS and COVID-19 infection have 4.6 times and 3.8 times higher risk of in-hospital all-cause and cardiovascular mortality (RR 4.58, 95% CI 3.23 - 6.50, p<0.001) (RR 3.83, 95% CI 1.32- 11.12, p=0.01), respectively, compared to patients without COVID-19. They also have a significantly high risk of cardiac arrest on presentation (RR 1.95, 95% CI 1.24 - 3.07, p=0.004). There was an elevated risk of requiring aspiration thrombectomy (RR 1.55, 95% CI 1.11 - 2.18, p=0.01) and no reflow (RR 2.28, 95% CI 1.37 - 3.77, p=0.001), along with higher risk of MINOCA (RR 2.49, 95% CI 1.31 - 4.72, p=0.005) in COVID-19 patients. Subgroup analysis of patients with STEMI also showed a significantly higher risk of in-hospital all-cause mortality, cardiac arrest on presentation, no reflow, and use of aspiration thrombectomy. Serum C-reactive protein (MD 65.33 mg/L, 95% CI 44.42 - 86.23, p<0.001) and D-dimer levels (MD 1.48 mg/L, 95% CI 0.65 - 2.31, p=0.005) were significantly higher in COVID-19 patients.

Conclusions Patients with ACS and COVID-19 have an increased risk of in-hospital all-cause and cardiovascular mortality, as well as higher risk of aspiration thrombectomy use, no reflow and MINOCA compared to no COVID-19 patients.

doi:10.1016/j.carrev.2022.06.131

200.09

Myocarditis After COVID-19 Vaccination: A Systematic Review of Case Studies

Dae Yong Park[a], Seokyung An[b], Saurabh Malhotra[a], Aviral Vij[a]

[a]*John H. Stroger, Jr. Hospital of Cook County, Chicago, IL*
[b]*Seoul National University, Seoul, Republic of Korea*

Characteristics	N (%)
Age, mean (range), year	25.0 (14-70)
Sex	
Male	69 (94.5)
Female	4 (5.5)
Vaccine type	
BNT-162b2	47 (64.4)
mRNA-1273	25 (34.2)
Ad.26.COV2.S	1 (1.4)
Vaccine dose	
First	9 (12.3)
Second	64 (87.7)
Time to onset, mean (SD), day	3.5 (3.82)
Length of stay, mean (SD), day	5.2 (1.90)
Symptoms	**N (%)**
Fever	
Yes	20 (27.4)
No	20 (27.4)
Not reported	33 (45.2)
Chest pain	
Yes	64 (87.7)
No	0
Not reported	9 (12.3)
Chills	
Yes	12 (16.4)
No	52 (71.2)
Not reported	9 (12.3)
Myalgia	
Yes	12 (16.4)
No	52 (71.2)
Not reported	9 (12.3)
Headache	
Yes	7 (9.6)
No	57 (78.1)
Not reported	9 (12.3)
Dyspnea	
Yes	7 (9.6)
No	57 (78.1)
Not reported	9 (12.3)
Vital Signs	**Mean (SD)**
Temperature, °C	37.5 (0.78)
SBP, mmHg	119.8 (14.1)
DBP, mmHg	71.6 (11.1)
PR, beats per minute	91.4 (18.5)
RR, breaths per minute	18.0 (1.31)
SpO_2, %	98.7 (1.32)

Laboratory and Testing Variables	N (%)
Troponin	
Elevated	29 (39.7)
Not elevated	0
Not reported	44 (60.3)
cTnI, mean (SD), ng/mL	8.3 (8.7)
Peak cTnI, mean (SD), ng/mL	18.1 (15.3)
hs-cTnI, mean (SD), pg/mL	2,081 (2,459)
Peak hs-cTnI, mean (SD), pg/mL	6,028 (2,098)
cTnT, mean (SD), ng/L	373.1 (463.5)
Peak cTnT, mean (SD), ng/L	658.1 (564.9)
WBC	
Normal	15 (20.6)
Abnormal	8 (10.9)
Not reported	50 (68.5)
WBC count, mean (SD), /μL	8,987 (3,943)
CRP	
Elevated	34 (46.6)
Not elevated	2 (2.6)
Not reported	37 (50.7)
CRP, mean (SD), mg/L	46.3 (41.0)
ESR	
Elevated	14 (19.2)
Not elevated	13 (17.8)
Not reported	46 (63.0)
ESR, mean (SD), mm/h	16.6 (10.8)
BNP	
Elevated	2 (2.7)
Not elevated	7 (9.6)
Not reported	64 (87.7)
BNP, mean (SD), pg/mL	71.2 (60.4)
EKG	
Normal	3 (4.1)
ST elevation	57 (78.1)
ST depression	2 (2.7)
PR depression	8 (11.0)
T wave inversion	27 (37.0)
Others*	8 (11.0)
Not reported	3 (4.1)
LVEF	
<50%	10 (13.7)
≥50%	59 (80.8)
Not reported	3 (5.5)
LVEF, mean (SD), %	53.3 (4.7)

Treatment	N (%)
NSAID	25 (34.2)
Colchicine	17 (23.3)
Steroids	7 (9.6)
Beta-blocker	7 (9.6)
IVIG	6 (8.2)
Aspirin	4 (5.5)
ACEi/ARB	3 (4.1)
Acetaminophen	1 (1.4)
Diuretics	1 (1.4)
Statin	1 (1.4)
Clopidogrel	1 (1.5)
Not reported	39 (53.4)

*Ectopic atrial rhythm, sinus tachycardia, non-sustained ventricular tachycardia, left axis deviation, and incomplete right bundle branch block

Abbreviations: ACEi = angiotensin-converting enzyme inhibitor, ARB = angiotensin II receptor blocker, BNP = brain natriuretic peptide, CRP = c-reactive protein, cTnI = cardiac troponin I, cTnT = cardiac troponin T, DBP = diastolic blood pressure, EKG = electrocardiogram, ESR = erythrocyte sedimentation rate, hs-cTnI = highly-sensitive cardiac troponin I, IVIG = intravenous immunoglobulin, LVEF = left ventricular ejection fraction, NSAID = non-steroidal anti-inflammatory drug, PR = pulse rate, RR = respiratory rate, SBP = systolic blood pressure, SD = standard deviation, SpO_2 = pulse oximeter oxygen saturation, WBC = white blood cell

Background The coronavirus disease of 2019 (COVID-19) is a global pandemic with over 200 million cases and four million deaths worldwide. Anti-COVID-19 vaccinations have had exceptional success in subduing the incidence, prevalence, and disease severity of COVID-19, but rare cases of myocarditis have been reported after COVID-19 vaccinations.

Methods We performed a systematic literature search on PUBMED, MEDLINE, EMBASE, and Cochrane Reviews database from inception to July 18, 2021. Studies were analyzed based on predetermined eligibility criteria.

Results A total of 19 studies containing 73 cases of COVID-19 vaccine-associated myocarditis were catalogued. Mean age was 25 years, and male to female ratio was 17:1. For 87.7% of patients, myocarditis occurred after the second dose. Average time to onset and length of hospitalization were 3.5 days and 5.2 days, respectively. Prognosis was benign with 100% recovery. Chest pain (100%); elevation of troponin (100%) and CRP (94.4%); and ST elevation on EKG (81.4%) were common. NSAIDs (73.5%) were the most used medication, followed by colchicine (50%).

Conclusions Patients with COVID-19 vaccine-associated myocarditis are usually younger males presenting with chest pain 3.5 days after receiving their second dose. Work-up typically shows elevation of troponin and CRP with ST changes in EKG. Diagnosis is made after excluding all other etiologies. Given significant population benefit from COVID-19 vaccination, physicians should continue to encourage vaccination while remaining vigilant of the very rare occurrence of myocarditis following COVID-19 vaccination.

doi:10.1016/j.carrev.2022.06.132

ENDOVASCULAR – Critical Limb Ischemia

300.01

Utilization of EKOS (Ultrasound-Accelerated Thrombolysis) in the Treatment of Acute Limb Ischemia: One-Year Outcome Follow-Up

Stefan Raicevic, Christopher Le, En-Dien (Sam) Liao, Zhaunn Sly, Marina Iskandir, Scott Shurmur, Mohammad M. Ansari

Texas Tech University Health Science Center, Lubbock, TX

Background Acute limb ischemia (ALI) is a serious complication of peripheral arterial disease and critical limb ischemia. ALI can be difficult to treat since it often involves many vessels. If detected early enough, ALI can be treated by various endovascular techniques to quickly revascularize the affected vessels to prevent negative outcomes and future complications. Improvements in endovascular technologies are key to fast and efficient re-perfusion. The purpose of this case series is to analyze the efficacy of EKOS ultrasound-accelerated thrombolysis (Boston Scientific, USA) as a treatment