





Characteristics and outcomes of patients with SARS-CoV-2 infection and out-of-hospital cardiac arrest: a systematic review and meta-analysis

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Background

reduced rates of survival (16/856 [1.9%] vs. 153/2344

Out-of-hospital cardiac arrests (OHCA) increased during the COVID-19 pandemic suggesting a causative association between infection and cardiac arrest. The most plausible trigger of cardiac arrest is a sudden deterioration of acute respiratory failure, but also myocardial involvement, endothelial injury, thromboembolism, and myocarditis are likely. Characteristics and outcomes of patients with OHCA and concomitant SARS-CoV-2 infection are still poorly investigated. Therefore, we conducted a systematic review and meta-analysis to assess outcomes of SARS-CoV-2 patients and out-ofhospital cardiac arrest.

Methods

PubMed and EMBASE were searched up to April 05, 2021. We included studies comparing patients with out-of-hospital cardiac arrests with SARS-CoV-2 infection versus non-infected patients. The primary outcome was survival at hospital discharge or at 30

[6.5%]; OR=0.33; 95% CI, 0.17–0.65; P=0.001) and return of spontaneous circulation (188/861 [22%] vs. 640/2403 [27%]; OR=0.75; 95% CI, 0.65–0.86; P<0.001) when compared to non-infected patients. Ambulance arrived later (15±10 vs 13±7.5 minutes; MD=1.64; 95% CI, 0.41–2.88; P=0.009) and non-shockable rhythms (744/803 [93%] vs. 1828/2217 [82%]; OR=2.79; 95% CI, 2.08–3.73; P<0.001) were more frequently observed while rate of bystander-initiated cardiopulmonary resuscitation was not different (439/828 [53%] vs. 1164/2304 [51%]; OR=0.95; 95% CI, 0.73–1.24; P=0.70).

Figure 1. Forest plot for return of spontaneous circulation (B). *df* = degrees of freedom, M–H = Mantel-Haenszel, CI = confidence interval.

B) Return of spontaneous circulation SARS-CoV-2 infection No infection Risk Ratio Risk Ratio M-H, Random, 95% CI Study or Subgroup Total Events Total Weight M-H, Random, 95% CI Events Baert 2020 (France) 196 161 0.87 [0.62, 1.21] 803 17.2% Baldi 2020 (Lombardy, Italy) 20 227 2.8% 0.90 [0.40, 2.06] 88 Fothergill 2020 (London, UK) 115 393 314 742 62.9% 0.69 [0.58, 0.82] Kim 2020 (Daegu, Korea) 71 1.9% 1.25 [0.46, 3.39] 19 Navalpotro-Pascual 2021 (Madrid, Spain) 226 87 20 2.8% 0.91 [0.40, 2.07] Sultanian 2021 (Sweden) 22 88 106 334 12.4% 0.79 [0.53, 1.17] Total (95% CI) 0.75 [0.65, 0.86] 2403 100.0% Total events 188640 Heterogeneity: Tau² = 0.00; Chi² = 2.98, df = 5 (P = 0.70); l² = 0% 0.01 0.1 10 Test for overall effect: Z = 4.06 (P < 0.0001) Lower in COVID-19 pts Higher in COVID-19 pts

days.

Results

In the ten included studies, 19% (1299/7024) of outof-hospital cardiac arrests occurred in patients with SARS-CoV-2 infection. Patients with out-of-hospital cardiac arrest and SARS-CoV-2 infection had

Conclusions

One fifth of patients with out-of-hospital cardiac arrest had SARS-CoV-2 infection. These patients had low rates of ROSC and survival and were characterized by higher non-shockable rhythms but similar rate of bystander-initiated cardiopulmonary resuscitation.

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