

Arrhythmia patterns in patients with COVID-19 infection during and post hospitalization detected via a patch-based mobile cardiac telemetry system

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Background: Coronavirus infection (COVID-19) is the cause of the current world-wide pandemic. Cardiovascular complications occur in 20–30% of patients with COVID-19 infection including myocardial injury and arrhythmias. Current understanding of specific arrhythmia type and frequency is limited. In response to COVID-19 pandemic and overwhelmed hospital critical care and telemetry recourses, patch-based cardiac monitoring system received emergency Food and Drug Administration (FDA) approval for inpatient monitoring. A patch-based cardiac telemetry system has been shown to be useful for patient management during the COVID-19 pandemic and provides detailed analysis of cardiac rhythms.

Purpose: To analyze arrhythmia type and frequency in patients with COVID-19 infection, identifying arrhythmia patterns over time during hospitalization and after discharge.

Methods: A prospective cohort study during the COVID-19 pandemic was performed. We included patients hospitalized with COVID-19 infection who had a patch-based mobile telemetry device placed for cardiac monitoring. A quantitative analysis including type, frequency and duration of detected arrhythmias was performed at the end of the monitoring period.

Results: A total of 103 patients hospitalized with COVID-19 diagnosis underwent monitoring. Quantitative reports for 59 patients were available for

analysis, among those 59% were males, median age 65 (IQR 56–76) yrs. Mean wear time was 6.8±5.0 days. Arrhythmias were detected in 72.9% of patients. Majority of arrhythmias were SVT (59.3% of patients) and AF (22.0%). Episodes of AF duration >30 min were detected in 12 patients. New onset AF was noted in 15.0% of patients and was significantly associated with age (OR 1.4 for 5 yrs difference; 95% CI 1.01–2.05). Brady arrhythmias (2nd degree, 3rd degree AV block, pause≥3 seconds) were seen in 18.7% of patients. Arrhythmias were consistently detected throughout the monitoring period in 52.9%–89.5% of patients daily (Figure 1). In 9 patients who were discharged with continued patch monitoring, 3 patients (33.3%) had arrhythmic events during their outpatient monitoring period.

Conclusion: A majority of patients hospitalized with COVID-19 infection had arrhythmias detected by patch cardiac monitor. Arrhythmias were observed throughout hospitalization with a consistent daily frequency. Patients continued to exhibit cardiac arrhythmias after hospital discharge of a type similar to that seen during hospitalization. New onset AF often occurred and was associated with older age. Inpatient application of a patch cardiac telemetry with continued monitoring as outpatient is feasible and effective in detecting occult arrhythmias in patients with COVID-19 infection.

