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The Impact of Ejection Fraction on COVID-19 Patients With Myocardial Injury

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Background: Coronavirus disease 2019 (COVID-19) has demonstrated deleterious effects on the cardiovascular system, which is associated with worse outcomes. Myocardial injury in COVID-19 is common and, coupled with a reduction in ejection fraction (EF), is concerning for myocarditis. We sought to investigate the outcomes of COVID-19 patients with evidence of myocardial injury and a reduced ejection fraction.

Methods: This was a retrospective observational study in which we screened COVID-19-positive patients who presented to the MedStar Health system (11 hospitals in Washington, DC, and Maryland) since the beginning of the COVID-19 pandemic (March–September 2020). We compared patients with a positive troponin (defined as >1.0 ng/mL) and reduced EF (<50%) to those with preserved EF (>50%) examining inpatient outcomes.

Results: There were 3386 COVID-19-positive patients admitted to the MedStar system from March through September 2020 in whom a troponin was drawn. Of these, 195 patients had a positive troponin, of whom 105 had a transthoracic echocardiogram (TTE) during admission. There were 41 COVID-19-positive patients with a positive troponin and a reduced EF and 64 COVID-19-positive patients with a positive troponin and a preserved EF (32.4% vs. 60.2%; $p=0.0001$). Patients with a reduced EF saw higher maximum troponins during their admission (28.1 ng/mL vs. 5.6 ng/mL; $p=0.0104$), but similar rates of requiring intubation (58.5% vs. 57.8%; $p=1.0000$), intensive-care-unit length of stay (ICU LOS) (9.4 days vs. 12.1 days; $p=0.2978$) and inpatient mortality (36.6% vs. 31.3%; $p=0.6721$).

Conclusions: COVID-19 patients with evidence of myocardial injury and reduced EF have higher troponin elevations compared to those with preserved EF but demonstrate similar dismal inpatient outcomes regardless of EF with higher rates of requiring intubation, prolonged ICU LOS, and an inpatient mortality >30%.

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Radiation-Dose Reduction During Catheterization Procedures Using Simple Partial Patient ShieldingAlireza Serati^a, Ashkan Hashemi^b, Babak Sharifkashani^c, Sourmah Nourbakhsh^d, Arash Hashemi^d, Sepideh Emami^e, Mohammad Reza Movahed^f^a*Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran*^b*Islamic Republic of Tehran University of Medical Sciences (TUMS), Erfan General Hospital, Tucson, Iran*^c*Islamic Republic of Shahid Beheshti University of Medical Sciences, Tucson, AZ*^d*Erfan General Hospital, Tehran, Iran*^e*Islamic Republic of Iran University of Medical Sciences, Tehran, Iran*^f*Islamic Republic of University of Arizona Sarver Heart Center and CareMore, Tucson, AZ*

Background: Reduction in X-ray exposure during cardiac catheterization is important to reduce radiation risks for operators and personnel. Reducing scattered radiation from the patient can achieve this goal. Scattered radiation is correlated with the patient's

body surface area. The goal of this study was to evaluate the reduction in radiation using simple partial shielding of patients undergoing cardiac catheterization.

Method: By putting a lead-based apron on the lower extremities of patients undergoing cardiac catheterization, we analyzed the reduction in total radiation with and without this shielding.

Results: A total of 112 patients were divided into 2 groups. In one group, the protective lead-based apron was put on the lower extremities of patients. Another group was free of the shield. Total angiography times were 332 minutes and 45 seconds in the first group and 269 minutes and 10 seconds in the second group. Total radiation exposure was 33 μ Gy in the first group vs 606 μ Gy in the second group.

Conclusion: Despite higher exposure time, the total radiation dose was 22 times lower in the protected group. Our simple method, available without any additional cost, can significantly reduce a patient's radiation exposure thereby reducing long-term health risks.

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Characteristics and Outcomes of Patients Undergoing Coronary Intervention for In-Stent RestenosisChava Chezar-Azerrad^a, Charan Yerasi^a, Brian C. Case^a, Brian J. Forrestal^a, Giorgio A. Medranda^a, Corey Shea^a, Cheng Zhang^a, Gheorghe Doros^a, Lowell F. Satler^a, Nelson L. Bernardo^a, Itsik Ben-Dor^a, Toby Rogers^{a,b}, Hayder Hashim^a, Gary S. Mintz^a, Ron Waksman^a^a*MedStar Washington Hospital Center, Washington, DC*^b*National Heart, Lung and Blood Institute, National Institutes of Health, Bethesda, MD*

Background: In-stent restenosis (ISR) occurs at rates of 5–10% in drug-eluting stents (DES). Intervention using drug-coated balloons (DCB) has had mixed results. Study designs comparing DCB to other interventions are mostly based on previous small, randomized controlled studies for population size estimates.

Methods: We performed a retrospective analysis of all patients from the MedStar Washington Hospital Center (Washington, DC) database who underwent percutaneous coronary intervention (PCI) of ISR lesions between 2007 and 2018. Primary endpoint was target lesion revascularization (TLR) major adverse cardiac events (MACE), defined as the composite of all-cause mortality, Q-wave myocardial infarction, and TLR at 1-year follow-up. We estimate the sample size required for future studies comparing DCB versus DES for non-inferiority with a margin of 10% and versus plain old balloon angioplasty (POBA) for superiority.

Results: A total of 2377 patients had an intervention to an ISR lesion; 844 patients were treated with POBA and 1533 were treated with a DES, with baseline characteristics shown in Figure 1. Patients undergoing POBA had significantly higher in-hospital outcomes as shown in Figure 1. At 1-year follow-up, TLR-MACE rates were 25% in the POBA group vs. 13.8% in the DES group ($p<0.001$). Assuming that DCBs have the same 1-year TLR-MACE rate as DES, the sample size for 90% power at a 2.5% significance level comparing DCB vs POBA is 466 and for DCB vs DES is 454. However, when factoring uncertainty around the estimated TLR-MACE, the sample size varies between 382 and 1916.

Conclusion: With small differences between both groups' baseline characteristics, in this all-comers cohort, the outcomes were worse with POBA compared to DES in ISR lesions. With the estimated rates, we demonstrate sample sizes similar to highly controlled studies without many exclusion and inclusion criteria.