

Percutaneous coronary intervention during on- and off-hours in patients with ST-segment elevation myocardial infarction

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Introduction: There are conflicting data on the clinical outcomes of percutaneous coronary intervention (PCI) for ST-segment elevation myocardial infarction (STEMI) based on time of intervention. Concerns have been postulated regarding equally effective in-hospital outcomes for STEMI patients treated with PCI during normal working hours as compared to group treated off-hours.

Purpose: The aim of this study was to assess clinical outcomes in “real-world” patients with STEMI treated with PCI during off-hours and regular hours of work.

Methods: To avoid possible bias related to the non-randomized design, a propensity score was calculated to compare off- and on-hours groups. The study group consisted of 37, 469 matched pairs in STEMI treated with PCI and stent implantation between 2014 and 2018 during regular hours (weekdays 7:00 AM to 16:59 PM) and off-hours (weekdays between 17:00 PM and 06:59 AM, weekends, and holidays) in 151 tertiary invasive cardiology centers in Poland (the ORPKI Polish National Registry).

Results: No differences were reported between both groups in baseline characteristics after the propensity score match (PSM). There were

no differences in time from pain to first contact ($p=0.2$) and door to balloon time between both groups ($p=0.7$). After PSM higher radiation dose was observed in off-hours group (1055.18 (± 1006.52) vs. 1081.59 (± 1003.25)[mGy]; $p=0.001$). However, there was no difference in total amount of contrast (on-hours vs. off-hours: 175.69 (± 74.71) vs. 176.48 (± 74.41)[ml]; $p=0.1$, respectively). Similar rate of periprocedural complications was observed between both groups of patients, including stroke, access-site-related bleeding, allergic reaction and coronary artery perforation. However, procedures performed during off-hours were associated with higher incidence of periprocedural death (1.17% (439) vs. 1.49% (559); $p=0.001$) and periprocedural cardiac arrest (1.76% (658) vs. 1.97% (740); $p=0.001$) as compared to PCI conducted within normal working hours.

Conclusions: Percutaneous coronary intervention in STEMI performed during off-hours might be associated with higher rate of periprocedural mortality and higher radiation dose as compared to procedures conducted during regular working hours.