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Comparison of safety and effectiveness between right and left radial artery approach in percutaneous coronary intervention for acute coronary syndrome. Propensity score analysis of data from the ORPKI

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Introduction: The use of the radial approach (RA) for percutaneous coronary intervention (PCI) has gradually increased. Several studies demonstrated that radial artery is associated with significant reduction in major adverse cardiac events for both coronary angiography and PCI in acute coronary syndrome (ACS). However, it is still unclear if the side of RA has influence on clinical outcomes in an all-comer population in ACS settings.

Purpose: We sought to evaluate safety, feasibility, and clinical outcomes of right radial approach (RRA) compared to left radial approach (LRA) during PCI in "real-world" patients with ACS.

Methods: A total of 234,087 consecutive patients with ACS treated with PCI and stent implantation via radial approach between 2014 and 2017 in 151 invasive cardiology centers on the Polish territory. Data was based on the ORPKI Polish National Registry. Patients treated with RRA and LRA were compared using a propensity score analysis to avoid possible selection bias. The analysis was done in an "as-treated" manner.

Results: Procedure was conducted using RRA and LRA in 180,378 (77.1%) and 53,709 (22.9%) patients, respectively. After propensity score

matching higher total amount of contrast (174.28 (\pm 75.56) vs. 166.95 (\pm 70.57) [ml]; $P=0.001$) and radiation doses were reported in PCI with left radial artery utilization (1210.21 (\pm 1003.53) vs. 1054.07 (\pm 1024.17) [mGy]; $p=0.001$). No differences were observed between RRA and LRA in rate of periprocedural adverse events such as myocardial infarction (0.08% vs. 0.08%; $p=0.9$) stroke (0.02% vs. 0.01%; $p=0.1$), no-reflow phenomenon (0.64% vs. 0.56%; $p=0.1$) and death (0.25% vs. 0.24%; $p=0.7$). A trend towards a lower rate of access-site-related bleeding during PCI was observed in RRA group (0.08% vs. 0.05%; $p=0.066$). Coronary artery perforation (0.21% vs. 0.16%; $p=0.05$) and cardiac arrest (0.56% vs 0.42%; $p=0.01$) were reported more often during PCI conducted with LRA.

Conclusions: Both radial approaches seems to be equally effective in the setting of PCI in ACS. However, utilization of left radial artery was associated with trend toward increased risk of access-site bleeding and higher rate of periprocedural complications as compared to RRA. Higher amount of contrast and radiation doses used in LRA procedures might be equivalent of generally lower experience with this access site.