PREVALENCE OF ERRORS IN FRACTIONAL FLOW RESERVE MEASUREMENT IN A HIGH VOLUME TERTIARY CARE CENTER

Poster Contributions
Poster Hall B1
Sunday, March 15, 2015, 3:45 p.m.-4:30 p.m.

Session Title: Pharmacotherapy and Complex Coronary Interventions
Abstract Category: 36. TCT®ACC-i2: IVUS and Intravascular Physiology
Presentation Number: 2103-297

Authors: Arsalan Riaz, Mirza Nubair Ahmad, Fatima Husain, Syed Shahab Kazmi, Imran Husain, Haroon Yousaf, Khawaja Afzal Ammar, Anjan Gupta, Aurora Cardiovascular Services, Aurora Sinai/Aurora St. Luke’s Medical Centers, Milwaukee, WI, USA, University of Wisconsin School of Medicine and Public Health, Milwaukee, WI, USA

Background: As fractional flow reserve (FFR) measurement has been incorporated with routine coronary interventional practice, national guidelines have been released regarding quality control of these measurements. We sought to measure the prevalence of errors in FFR measurement in a busy (n=10,000 procedures annually) cardiac catheterization laboratory of a large tertiary care center.

Methods: We retrospectively evaluated all the clinically documented FFR measurements performed in the coronary catheterization laboratory over the last 4 years. Each pressure tracing was visually inspected for presence of artifacts by three physicians and then controversial tracings or those with artifacts were adjudicated by a committee of five physicians, led by the director of coronary catheterization laboratory. Then manual FFR measurement was performed on all the tracings. The procedure logs and medical records were obtained and any discrepancy between the clinically documented FFR and the manual FFR measurement was adjudicated by the same committee.

Results: Out of 926 FFR measurements performed for intermediate coronary stenoses, the errors with the potential to influence the clinical decisions and inaccurate FFR measurements were few (n=8, 0.9%). These included failure to achieve hyperemia in 3, zeroing error in 2, whip artifact in 1, signal drift in 1 and motion artifact in 1 patient. The errors that did not affect clinical management included 73 (7.8%) with no route of infusion mentioned, 51 (5.5%) with no tracings and 83 (9%) with recording error where the tracing was started too late, so no meaningful data was saved. The correlation with clinically documented FFR and actual FFR measurement was 0.95; p<0.0001. In those without artifacts (n=555), there were 7 tracings (0.8%) in which manually measured FFR was significantly different from clinical FFR.

Conclusion: Although the prevalence of errors in FFR measurement is low (1.6%) in a busy cardiac catheterization laboratory, the prevalence of clinically insignificant errors is high (n=207, 22%), which hampers the ability to perform adequate research and quality control, both of which are important components of daily operation.