Evaluation of Quantitative Coronary Angiography for Assessment of Adequacy of Stent Deployment

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Abstract

Objective: To determine the adequacy of stent symmetry (deployment) as assessed by intravascular ultrasound (IVUS) and its comparison with quantitative coronary angiography (QCA).

Methodology: In this comparative study we analyzed the stents for adequate deployment in 100 patients who were randomly selected from the patients who were undergoing percutaneous coronary angiography (PCI) either with bare metal or drug eluting stent at our catheterization laboratory, Cardiology department Postgraduate Medical Institute (PGMI) Lady Reading Hospital Peshawar. The study was conducted from August 2010 to February 2011. We used Volcano therapeutic intravascular ultrasound (IVUS) system employing Volcano ? eagle eye Gold catheter. Stents was supposed to be symmetrical (adequately deployed) if the ratio of minimum luminal diameter to maximum luminal diameter was 0.7.Performa was used to collect patient's details and record the IVUS analysis. Statistical Package for the Social Sciences SPSS version 15 was used to analyze the data.

Results: A total of 100 subjects were included in the study, their mean age was 54.38 ± 9.97 years and 85 %(85) were male. Diabetics were 40 %(40), hypertensive's were 47%(47), dylipidemic were 46%(46) smokers were 36%(36) and 40%(40) had a previous myocardial infarction. Both drug eluting and bare metal stents were used and the main drug eluting stent was endeavor (Zatrolimus eluting stent) and the main bare metal stent was integrity. Left anterior descending artery (LAD) was most commonly stented artery, followed by circumflex and right coronary artery respectively.

Mean ratio of the minimum to maximal luminal diameter was 0.8205 ± 0.084. A ratio of greater than 0.7 was achieved in 77.5% patients so that they had a better symmetry.

By quantitative coronary angiography (QCA) only 5% of the stented lesions were having greater than 10% residual stenosis not properly deployed while 95% of the stents were adequately deployed. When we compared our finding of IVUS with that of quantitative coronary angiography(QCA)by applying chi-square test, we found that there were significant stents that were not properly deployed (p valve of 0.00312) and need further dilatation.

Conclusion: In significant number of patients stents were not adequately deployed requiring re-ballooning to optimize the results as assessed by intravascular ultrasound (IVUS).

Key wards: Intravascular ultrasound (IVUS), quantitative coronary angiography (QCA), percutaneous coronary intervention (PCI), right coronary artery (RCA), left anterior descending artery (LAD), left circumflex coronary artery (Circ)