Abstract: P272
The need for vasodilators use prior to transradial cardiac catheterization in high volume cardiac center

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Background: Radial artery spasm (RAS) is one of the most common complication encountered by operators while performing trans-radial artery cardiac catheterization. Due to the technological advances in recent years and the increase number of experts in high volume centers, the prophylactic use of vasodilators may be unnecessary. To date, there are no clear recommendations for using these vasodilators and when to be used in day to day practice. Basically, It depends on operators discretion and hospital protocol. Therefore, further research in this area is warranted due to the conflicting findings of the prior studies.

purpose: To evaluate the need of using prophylactic vasodilators prior to trans-radial approach in high volume cardiac center and to identify factors associated with the development of RAS.

Methods: It is a prospective, randomized, double blind and placebo-controlled trial conducted in a single high volume cardiac center in Saudi Arabia from July to November 2017. Patients who met the inclusion criteria were randomized to either a cocktail vasodilators (nitroglycerin and verapamil) or matching placebo (normal saline) in 1:1 ratio. Subjective definition of RAS was utilized, consistent with previous studies. The primary outcome is the development of RAS in both groups. The secondary outcome is identifying the factors associated with the development of RAS. The calculated sample size is 315 patients. Data analysis was performed using SPSS 20 and STATA 15 softwares. Multiple stepwise logistic regression was used to examine the association between the study variables and incidence of RAS.

Results: A total of 490 patients were randomized (244 in placebo and 246 in treatment groups). There were no differences in the baseline demographic and clinical characteristics between both groups. Significantly, higher proportion of patients on the placebo group had RAS compared to those on the treatment group (23% vs 11%; p=0.001). After controlling for the other factors, patients on the treatment were less likely to develop RAS than those on the placebo (OR= 0.32; p <0.001). The independent risk factors associated with the occurrence of RAS are: female gender (OR= 6.18; p <0.001), multiple puncture attempts (OR= 2.83; p=0.003), current smoking (OR= 3.02; p =0.03) and using dihydropyridine calcium channel blockers (OR= 4.60; p <0.001). We did not find a significant relationship between operators’ level of experience and the occurrence of RAS.

Conclusion: The use of cocktail vasodilators reduces the incidence of RAS regardless to the hospital volume and operators experience. Further studies on factors associated with RAS is warranted.