Impact of radial compression protocols on the compression time and radial artery occlusion

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Background: Trans-radial access (TRA) has been established as a safe and established approach for invasive coronary catheter procedures. However, protocols for post-procedural hemostasis varies depending on institutes and an evidence-based protocol is lacking.

Purpose: The objective of this study was to investigate the clinical implications of procedural hemostasis.

Methods: Consecutive patients who were referred to outpatient catheter examination before and after April 2018 were treated with an old and a new protocol, respectively. In both protocols, we used the same commercially available hemostasis band with injecting an air of 16 ml for hemostasis. In the old protocol, the amount and timing of deflation were fixed, whereas the air was removed as much as possible for every 30 minutes in the new protocol. Time to complete hemostasis, the rate of major bleeding, and the rate of radial artery occlusion (RAO) at 6 months after the catheter examination were compared between the protocols.

Results: Total of 1,843 (71±10 years old, 77% male) patients was included in the study. Between patients in the old and the new protocol group (n=1,000 and 843, respectively), there was no significant difference in age, gender, body size, or systolic blood pressure. The new group had significantly higher prevalence of diabetes (47% vs 39%, p=0.002), slightly larger sheath size (4.1±0.3 vs 4.0±0.2 Fr, p<0.001), and lower rate of dual antiplatelet therapy (DAPT: 24% vs. 35%, p<0.001). Time for complete hemostasis was about one-third with the new protocol compared with the old protocol (65±32 vs. 190±16 min, p<0.001) and there was no major bleeding in either group. The rate of radial artery occlusion was 0.7% and 9.8% in the old and the new group (p<0.001). Multivariate analysis showed that the significant predictor of prolonged hemostasis time were the old protocol (odds ratio: OR 80.5, p<0.001) and the prescription of DAPT (OR 2.9, p<0.001), while the factors associated with higher risk of radial occlusion were the old protocol (OR 13.9, p<0.001), the number of previous TRA (OR 1.1, p<0.001), and smaller body size (OR 0.127 per 1 m^2 increase p=0.005).

Conclusions: Our new protocol for hemostasis after TRA was strongly associated with shorter hemostasis time and a lower rate of radial artery occlusion. This approach will decrease the post-procedural hospital time with even fewer complication rates.