

Early and chronic phased local coagulative responses following bioresorbable-polymer drug-eluting stent implantation

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Background: Neointimal maturation after bioresorbable-polymer (BP) drug-eluting stent (DES) implantation will not be complete in the absorption phase of the polymer. We have previously reported local persistent hypercoagulation after sirolimus-eluting stent (SES) implantation by measuring local plasma prothrombin fragment 1+2 (F1+2) levels. The aim of this study is to examine time-dependent local coagulative response after BP-DES implantation.

Methods: Sixty-four patients who were treated about ten months earlier with coronary angioplasty, with no evidence of restenosis, were studied [durable-polymer (DP)-DES {SES; Cypher[®]: 26pts and everolimus-eluting stent (EES); Xience[®]: 16pts} and BP-DES (BP-EES; Synergy[®]: 10pts and BP-SES; Ultimaster[®]: 12pts)]. We measured plasma levels of F1+2 sampled in coronary sinus (CS) and sinus of Valsalva (V) at the early (2±1 months) and chronic (10±2 months) phases. The transcardiac gradient (Δ) was defined as CS level minus V level.

Results: No significant differences were observed in the percent diameter stenosis between the DP- and BP-DES groups (11.5±15.5 vs 14.1±11.9%). The Δ F1+2 was significantly lower in the BP-DES group than in the DP-DES group at the chronic phase (7.5±16.1 vs 16.4±17.1pmol/l, $p<0.05$). In the BP-DES group, the Δ F1+2 did not differ significantly between the early and chronic phases (7.0±14.1 vs 7.5±16.1pmol/l, NS).

Conclusion: Lower local coagulative response was observed at the chronic phase after BP-DES implantation compared to DP-DES implantation, and local hypercoagulation after BP-DES implantation was not observed at the early phase compared to the chronic phase. These findings might lead to the possibility of shorter dual antiplatelet therapy after BP-DES implantation.