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Early vascular responses after ultrathin strut biodegradable polymer-coated sirolimus-eluting stent implantation: SiBi OCT study

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THEME: Coronary Interventions

TOPIC(S): Stents and scaffolds

AIMS

Recent optical coherence tomography (OCT) studies revealed that the lack of stent strut endothelial coverage is associated with late stent thrombosis after drug-eluting stent implantation. Nonetheless, the data regarding sequential changes of stent strut endothelial coverage for biodegradable polymer-coated stent remain limited. The aim of this study was to evaluate neointimal coverage in the early phase after ultrathin strut (60 µm) biodegradable polymer-coated Tetriflex (Sahajanand Medical Technologies Pvt. Ltd., Surat, India) sirolimus-eluting stent (SES) implantation using OCT.

METHODS AND RESULTS

Between January 2018 and April 2018, we enrolled consecutive patients with multi-vessel disease who underwent percutaneous coronary interventions (PCI) of the culprit lesion with Tetriflex SES followed by a staged PCI of other lesion(s) 4-6 weeks later. During the staged PCI for other lesions, an OCT examination of Tetriflex SES was also performed. The OCT was performed using a C7 Dragonfly™ imaging catheter (St. Jude Medical Inc., USA). All OCT images were analysed at an independent core laboratory (Cardiovascular Research Center, São Paulo, Brazil) by analysts who were blinded to patient and procedural information. During the study period 25 patients underwent PCI with at least 1 Tetriflex SES (27 stents in 25 lesions) and underwent OCT analysis after 35.3 ± 5 days of Tetriflex SES implantation. The mean age of patients was 48.7 years, 61.5% were male, and diabetes was present in 42.3% of patients. A total of 14,024 stent struts in 1520 cross sections were analyzed. The mean analyzed length of stented segment was 30.09 ± 11.19 mm and mean stent area was 6.06 ± 1.91 mm². Strut tissue coverage was observed in 91.26 ± 5.53 % of struts and malapposed struts were seen in 0.89 ± 1.67 %. The mean neointimal hyperplasia (NIH) thickness on the covered struts was 50 ± 30 µm.

CONCLUSIONS

In the present study, Tetriflex SES demonstrated an excellent healing profile with a mean of 91.26% strut coverage after 35.3 ± 5 days of the index procedure. Furthermore, the elevated percentage of strut coverage was accomplished with very thin layer of NIH at only 50 microns in thickness evenly distributed along the stent length.