The Clinical Implication of Neointimal Characteristics Observed in Optical Coherence Tomography after Stent Implantation

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Background: Recent studies have reported differential morphologic characteristics of neointimal tissue after stenting by optical coherence tomography (OCT). The aim of this study was to investigate the clinical implication of the characteristics of neointimal hyperplasia after stent implantation.

Methods: A total of 492 lesions in 447 patients treated with stents from the Yonsei OCT registry were divided into two groups based on the OCT characteristics: heterogeneous group including thin-cap fibroatheroma (TCFA) (n=146 lesions in 135 pts) and non-heterogeneous group (homogenous and layered, n=346 lesions in 312 pts). The baseline clinical characteristics, angiographic features and OCT findings were compared between the two groups. The major adverse cardiac events (MACEs) were a composite of cardiac death, non-fatal myocardial infarction (MI), target lesion revascularization (TLR) were assessed according to neointimal patterns.

Results: The mean age of heterogeneous group and prevalence of acute coronary syndrome (ACS) was higher (64±1.8 vs. 61±4.9, p=0.004 and 60.3% vs. 51.6%, p=0.003). Statins were less often used in heterogeneous group (86.9% vs. 93.8%, p=0.016). The heterogeneous group showed a significantly higher frequency of bare metal stents (BMs) (5.6% vs. 0.9%, p<0.001) and 1st generation drug-eluting stents (DESs) (49.3% vs. 37.3%, p=0.016). Compared with non-heterogeneous, heterogeneous group had a longer time interval after stenting (33.4±42.2 vs. 16.2±22.3 months, p<0.001). In multivariable analysis, the most significant determinant for the heterogeneous pattern was the initial ACS diagnosis (odds ratio [OR] = 2.13, 95% confidence interval [CI] = 1.28-3.54, p=0.004). The MACEs occurred more frequently in the heterogeneous group (14.9% for 4-years vs. 4.7%, p<0.001). A multivariate Cox regression analysis also showed that heterogeneous neointimal types could be an independent risk factor (HR = 3.23, 95%CI = 1.34 – 7.82, p=0.009).

Conclusions: The neointimal characteristics could be helpful to predict long-term clinical outcomes. Especially, heterogeneous neointimal pattern might be related with a poor clinical prognosis.

Relation of Stent Thrombosis to Interruption of Dual Antiplatelet Therapy After Resolute Zotarolimus-eluting Stent Implantation

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Background: Dual antiplatelet therapy (DAPT) is utilized for varying durations following drug-eluting stent (DES) implantation in patients with stable coronary artery disease, largely based on concerns of stent thrombosis (ST). A prior study of 5371 patients undergoing Resolute™ zotarolimus-eluting stent (R-ZES) implantation found that the greatest risk of ST occurred in the first month after the procedure if DAPT was interrupted. We sought to extend this analysis.

Methods: A patient-level analysis of all available Resolute™ zotarolimus-eluting stent (R-ZES) studies (n=8) was conducted. Rates of ARC definite/probable ST at one year were examined as a function of whether DAPT was interrupted prior to ST for more than 1 day within the first month or between 1 and 12 months after stent placement.

Results: There were a total of 7131 patients eligible for the DAPT analysis; 1315 pts (18%) had an interruption of DAPT during the first 12 months post R-ZES implantation. Of those 1315 patients, 221 (17%) had the DAPT interruption in the first month after the procedure if DAPT was interrupted in the first month was 3.2% (7/221) and 0.1% (1/1094) with DAPT interruption in the >1-12 month group. The rate of ST over 12 months in patients with no DAPT interruption was 0.7% (42/5816).

Conclusions: In this larger pooled analysis of patients undergoing R-ZES placement, the 12-month rate of ST was 0.7%, with the majority of ST events occurring during the first month after stent implantation. There was no apparent increased risk for ST in patients who needed to interrupt DAPT after the first month post R-ZES placement.

Difference In Outcomes After Repeat Percutaneous Coronary Intervention For Sirolimus-eluting Stent Restenosis Lesions With or Without Stent Fracture.

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Background: Presence of stent fracture (SF) after sirolimus-eluting stent (SES) implantation has been reported to be associated with an increased risk of in-stent restenosis and target lesion revascularization (TLR). Incidence of SF and the relevance to clinical outcomes following DES have been reported recently. But little is known about the outcomes after repeat percutaneous coronary intervention (PCI) for SES restenosis lesion with SF. So this study compared the outcomes after repeat PCI for SES restenosis lesion with or without SF.

Methods: From April 2007 to September 2011, total 2020 lesions implanted SES were analyzed. There were a total of 7131 patients eligible for the DAPT analysis; 1315 (18%) had an interruption of DAPT during the first month after the procedure if DAPT was interrupted in the first month was 3.2% (7/221) and 0.1% (1/1094) between 1-12 months post DES. The baseline characteristics of the patients were similar. The rate of ST over 12 months in patients with SF was 1.3% (3/221) and 0.1% (1/1094) between 1-12 month group. The rate of ST over 12 months in patients with non SF was 0.7% (17/2295) and 0.1% (1/1094) between 1-12 month group. The rate of ST over 12 months in patients with SF was 0.7% (17/2295) and 0.1% (1/1094) between 1-12 month group.

Conclusions: Restenosis lesions with SF had significantly high incidence of restenosis after repeat DES implantation.