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The mechanism of in-stent restenosis might be different between sirolimus-eluting stent and bare metal stent

[1]Matsue Red Cross Hospital

Fumiyo Tsunoda[1], Nobuo Shiode[1], Kinya Shirota[1], Yasuko Kato[1], Mai Fujiwara[1]

Objectives: It is established that sirolimus-eluting stent (SES) inhibits neointimal proliferation and dramatically reduces rate of in-stent restenosis (ISR). However the precise mechanism remains unclear. We evaluated ISR lesions with optical coherence tomography (OCT) that provides intravascular information with high resolusion. Methods: Twenty two SES-treated patients and 11 bare metal stent (BMS)-treated patients who underwent target lesion revascularization (TLR) between March 2008 and July 2009 were evaluated with OCT. The tissue of ISR was analyzed qualitatively for assessment of tissue structure and intraluminal materials. Results: The mean terms between stent implantation and TLR was 27 ± 4 months in SES and 22 &plusmn 10 months in BMS. The dual antiplatelet therapy was continued in 72% of SES group and 45% of BMS group. The stent edge type of ISR (41% vs. 9%, P= 0.06) was much in SES group. The rate of thrombus was similar in both groups. The rate of incomplete stent apposition (50% vs. 9%, p= 0.02) and heterogeneous pattern (31% vs. 0%, p<0.001) of neointima were higher in SES group than in BMS group. Conclusion: The presence of neointimal materials with optical properties and the rate of incomplete stent apposition were different between SES and BMS. It is suggested that the material of ISR might be composed of different tissues between SES and BMS.