Considerably lower risk of stent thrombosis and restenosis in 'new generation' drug-eluting stents

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Results from the SCAAR study, presented at the ESC Congress 2011 today, showed that Percutaneous Coronary Intervention (PCI) with "new generation" Drug Eluting Stents, was associated with a 38% lower risk of clinically meaningful restenosis and a 50% lower risk of stent thrombosis compared to old generation DES.

Although many trials and studies support the overall early and mid-term safety and efficacy of first-generation drug-eluting stents, there has been concern on their long-term safety, especially regarding the potential risk of late stent thrombosis as well as late restenosis.

New drug-eluting stents (n-DES) have been developed with the purpose of overcoming the current limitations of the older generation drug-eluting stents (o-DES).

The purpose of this study was to evaluate the long-term outcome in all patients who underwent stent implantation with bare metal stents (BMS), "older generation" drug eluting stents (o-DES), and "new generation" drug eluting stents (n-DES) in Sweden, using a national registry with complete consecutive enrolment, the Swedish Coronary Angiography and Angioplasty Registry (SCAAR).

The SCAAR holds data on consecutive patients from 29 centers that perform coronary angiography and percutaneous coronary intervention (PCI) in Sweden. The registry is sponsored by the Swedish Health Authorities and is independent of commercial funding. The technology is developed and administered by the Uppsala Clinical Research Center. Since 2001, SCAAR has been Internet-based, with recording of data online through an Internet interface in the catheterization laboratory; data are transferred in an encrypted format to a central server at the Uppsala Clinical Research Center.

All consecutive patients undergoing coronary angiography or PCI are included. Information with respect to restenosis and stent thrombosis has been registered for patients undergoing any subsequent coronary angiography for a clinical reason since the beginning of 2004.

Our study included 94384 stent implantations in Sweden (BMS, n=64631; o-DES, n= 19202; n-DES, n=10551), from November 2006 to October 2010. Follow-up was performed up to two years post-intervention.

The performance up to two years of different types n-DES was evaluated in an unselected large real-world population- including patients with myocardial infarction, three-vessel and/or left main disease, bifurcation lesions, graft disease, restenotic lesions and chronic total occlusions.

The main findings of this study are that PCI with "new generation" DES was associated with a 38% lower risk of clinically meaningful restenosis and a 50% lower risk of stent thrombosis compared to old generation DES.

Further studies are needed in order to attempt to discriminate whether one of the three components of the new generation DES- the polymer, the stent alloy, the eluting-drug- is mainly involved in decreasing the incidence of stent thrombosis and restenosis.

Improved stent designs with thinner struts, more biocompatible polymers may have an important impact on drug elution profiles, endothelial coverage, and functional recovery.

In conclusion, we showed that patients treated with

PCI with "new generation" DES have a considerably lower risk of restenosis and stent thrombosis at 2 years compared to older generation DES in a large real world population.

These findings can be useful for the management of patients with high risk profile that could benefit more from these new devices.

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