MedicalXpress

An 'important' reduction in risk of stent thrombosis with everolimus-eluting stent

August 30 2011

Results of the independently-funded Bern-Rotterdam cohort study provide robust evidence of an "important" reduction in overall and very late stent thrombosis. The reduction in incidence was found when a newer generation everolimus-eluting stent (EES) was compared with early generation drug-eluting stents (DES) at long-term follow-up.

"The near elimination of stent thrombosis observed between one and four years after implantation shows that everolimus-eluting stents overcome the principal limitation of early generation DES," said investigator Dr Lorenz Räber from the University Hospital of Bern, Switzerland. "This an important advance in the safety of DES."

As background to the study, Dr Räber notes that the introduction of DES, which release anti-proliferative drugs from a polymer on the stent surface to prevent the formation of excessive scar tissue within the metallic scaffold (restenosis), was an important advance in the field of interventional cardiology, as revascularisation due to restenosis was significantly decreased. However, after the introduction of DES, data indicated that the formation of normal scar tissue was occasionally inhibited to such an extent that the stents were left uncovered. This was partly explained by inflammatory reactions against the polymer coating, presdisposing to stent thrombosis.

Although rare, stent thrombosis is a serious complication, which may result in death or acute myocardial infarction. Stent thrombosis occurring more than one year after implantation – commonly referred to

as very late stent thrombosis (VLST) – has been observed more frequently in patients treated with early generation DES releasing the drugs paclitaxel or sirolimus than with bare metal stents and has emerged as a distinct entity complicating their use. The Bern-Rotterdam group has previously reported a steady annual risk of VLST of 0.6% up to five years following the implantation of early generation DES, a finding that has been confirmed by other trials and meta-analyses.

It is against this background that newer generation DES, such as everolimus-eluting stents, have been developed, to improve safety with the application of a more biocompatible polymer, along with a reduction in drug dose and reduced strut thickness. Whether these changes in design are sufficient to overcome VLST - the principal limitation of early generation DES - is to date not known.

The Bern-Rotterdam cohort study included more than 12,000 patients treated between 2002 and 2009 at the Bern University Hospital in Switzerland and the Thoraxcenter at Erasmus Medical Centre in Rotterdam, The Netherlands. The objective was to compare the incidence of stent thrombosis between newer generation DES eluting everolimus, and early generation DES eluting srolimus or paclitaxel, with particular focus on stent thrombosis occurring between one and four years (VLST).

Results showed that the rate of stent thrombosis up to four years was lower among patients treated with everolimus-eluting stents (1.4%) than with sirolimus-eluting stents (2.9%, p