MACE Predictors After Implantation of Sirolimus-eluting Stents - A Report from the e-Cypher Registry

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Introduction

The efficacy of sirolimus-eluting stents (SES) has been reliably documented in large, randomized clinical trials. Compared with standard coronary stents, the SES appears to hold considerable promise for prevention of neointimal proliferation, restenosis and clinical events (1).

Four randomized trials suggest that in patients with de novo lesions, use of SES resulted in significantly fewer major adverse cardiac events (MACE) as compared with bare metal stents over several years of follow-up. The lower MACE rate was primarily due to reduced need for repeat target vessel revascularization (2).

These stents are now widely used outside of the clinical trial setting, despite the fact that only limited information is available regarding the actual occurrence of MACE, and potential predictors of MACE, associated with use of the stent in routine clinical practice.

The e-CYPHER Registry

Dr. Urban presented an analysis of the e-CYPHER Registry, a real-world database including more than 15,000 patients who have undergone SES implantation. The purpose of the analysis was to identify predictors of MACE six months after SES implantation in this population.

Identifying predictors of MACE in patients who receive SES is just one goal of this large, post-marketing surveillance registry. Other goals are to determine the safety and reliability of SES in routine clinical use, the reproducibility of RCT results, and the patterns of use of SES worldwide in daily clinical practice. Several other analyses of e-CYPHER data were accepted for presentation here at the 2004 Scientific Sessions (3,4,5,6).

Patients enrolled in e-CYPHER have all received at least one SES; both on- and off-label use are recorded. Clinical follow-up at one, six and twelve months are included; there is no mandatory angiographic follow-up. Target recruitment was set at 15,000 patients, which has been met. A total of 15,566 patients have been enrolled, of which 15,169 can be analyzed. As of this presentation, 6-month follow-up was available in 11,920 patients.

There are 282 centers in 41 countries participating in e-CYPHER. Investigators input data on-site via the Internet; queries are submitted in HTML format. The majority of centers are in Europe (126 centers, including 36 in Spain, 30 in France and 10 in Italy). Additional sites are in Latin America (n=97), Asia Pacific (n=43) and the Middle East (n=15).
Baseline Characteristics

Of 15,169 analyzable patients (mean age 61.7 years, 77.8% male), 29.9% had a prior MI, 28.5% had prior PCI and 10.5% had prior CABG. Nearly 30% had diabetes. The majority of patients had multivessel disease. (Figure 1)

Figure 1:

Indications for PCI included stable angina in 41.8% of patients, and unstable angina in 33.5%. Other indications included silent ischemia (9.7%), acute myocardial infarction (7.0%) and recent myocardial infarction, defined as those cases occurring greater than 72 hours prior to the procedure (5.5%).

The mean number of lesions per patient, stents per patient and other patient characteristics are shown in (Figure 2). Of 18,310 lesions treated, the majority (88.1%) were de novo, while 11.9% represented restenosis. A total of 20,514 stents were deployed, the majority of which (n=10,424) were 3.00 mm in diameter. The most common length was 18 mm (n=7,917).

Figure 2:

Source: American Heart Association 2004
MACE at Six Months Follow-Up

All major adverse coronary events were adjudicated by an independent review committee. At 6 months follow-up, the overall MACE rate was 3.1%, (Figure 3) and the stent thrombosis rate was 0.88%, including 0.13% acute, 0.61% subacute and 0.14% late.

A total of 30 univariate MACE predictors were identified among baseline and procedure characteristics. By multivariate analysis, specific clinical predictors of MACE included advanced age, presence of insulin-dependent diabetes, and history of CABG. (Figure 4)
In his presentation, Dr. Urban also described multivariate analysis specifically for predictors of specific components of MACE (target lesion revascularization, death/MI) and stent thrombosis. Insulin-dependent diabetes and ACS at presentation were predictors of all MACE components and of stent thrombosis at 6 months. Advanced age was a predictor of all MACE components except for target lesion revascularization. (Figure 5)

Conclusion and Implications

This analysis of the large, international e-CYPHER patient registry shows the clinical, angiographic and procedural predictors of major adverse coronary events at 6 months after implantation of sirolimus-eluting stents. The main elements associated with MACE at 6 months are clinical (advanced age, history of CABG, insulin-dependent diabetes, ACS at presentation), angiographic (calcifications) and procedural (residual stenosis > 20%, TIMI flow < 3).

These medium-term data also illustrate the safety of SES implantation. Notably, investigators reported a MACE rate of 3.1% and a similarly low rate of stent thrombosis in a broad spectrum of clinical applications and angiographic situations.

Dr. Urban and colleagues are encouraged by the data, which suggest that the results seen in randomized, controlled trials can be replicated in routine clinical practice. However, more definitive conclusions regarding efficacy are awaited from the full 12-month follow-up.

REFERENCES


Source: American Heart Association 2004