

Characteristics and Outcome of Angiographically Confirmed Stent Thrombosis

To the Editor:

Stent thrombosis (ST), especially in drug-eluting stents, is currently one of the large concerns in interventional cardiology.

We read with great interest the article by Gallego et al¹ published in *Revista Española de Cardiología*, where they analyse the incidence of ST, its treatment and its prognosis in a sample of patients that underwent percutaneous coronary interventionism with conventional stents (CS) and drug-eluting stents (DES) from January of 1998 to December of 2007.

However, there are aspects regarding this study that we would like to mention.

The incidence of ST in CS and PAS is incredibly low (0.6%) and it is even lower than that documented in meta-analyses of clinical trials.²⁻⁴ In a realistic average, with more complex patients, a ST incidence greater than that observed in a clinical trial would be expected.⁵ Concerning the PAS, recently published observational studies have reported variable incidences of the ST (1.3%-3.3%).⁶⁻⁸ The authors have used the stent as a unit of follow-up instead of the patient, a fact that seems to underestimate the incidence of ST. If the angiographic definition represents the ideal method to document ST, it tends to underestimate the true magnitude of this problem as it does not include myocardial infarctions in the theoretical territory of a previously implanted stent that are reinfused with fibrinolysis nor the sudden deaths produced by thrombosis.⁵

The low mortality in ST may seem even more incredible in this series (5.2%), in spite of the fact that

its most frequent form of clinical presentation was an acute myocardial infarction with ST elevation. This goes against our experience, according to which the late thrombosis of PAS is a serious event with elevated mortality (23.5%) and that it is associated with an elevated vital risk in the mid to long term.⁷

In this series, in up to 43% of the stents where a ST was produced, there was some kind of complication during the interventional procedure. The fact that the complications condition a greater risk of ST, especially acute and subacute ST, is well known. It would be interesting to use that they correlate these complications during the intervention compared to the chronological types of thrombosis.

Very late thrombosis was infrequent in the CS in this series (0.04%). Other studies have reported a greater incidence of ST in PAS after the first year.²⁻⁴ However, in this study the 2 very late thromboses were found in patients with CS (7.3 and 8.3 years after implantation). It is not necessary to know how the methodological problem was solved that considers the restenosis of a CS treated with a DES to quantify the incidence of ST. It is possible that some of the late thromboses took place after the implanting of a DES over a restenosis of the previously implanted CS.

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Response

To the Editor:

We would like to thank the interest taken by Flores-Rios et al. As we mentioned in our article,¹ our data does not allow us to calculate the risk of stent thrombosis (ST). The estimation of the incidence of confirmed ST in our study, 6/1000 implanted stents, is similar to the accumulated incidence of 0.6% in 3 years in a meta-analysis of 3445 patients² or that of 0.6% in 15 months of a consecutive series of 12395 patients.³ Some studies, especially those that include probable and possible thrombosis, show greater incidences. However, the risk of including patients without a true ST is evident.⁴ Recently it has been proved that this happens even in studies with angiographic confirmation.⁵

Concerning intrahospital mortality (5.2%), it is similar to that of published studies that, such as ours, include both conventional and drug-eluting stents that vary between 0% to 6%.⁶⁻⁸

With 14 acute ST, 27 sub-acute ST, and only 9 late ST and 8 very late ST, the possibility to correlate the complications of the initial intervention and the chronological type of the thrombosis is limited. In any case, the distribution of ST in the 25 patients

with these complications was 10 acute, 11 subacute, and 4 late, which could indicate earlier ST in this subgroup. We did not find ST in any drug-eluting stent implanted inside of a conventional one.

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