



## EDITORIAL COMMENT

# The stent is only one tool in the treatment of STEMI<sup>☆</sup>

## O *stent* é só uma peça no tratamento do EAMcSST

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The article published in this edition of the *Journal*, “Outcomes of drug-eluting stents compared to bare-metal stents in ST-segment elevation acute myocardial infarction” by Brito et al., is based on a registry of primary angioplasty between 2003 and 2007 in a high-volume Portuguese center.

The aim of the study was to compare the clinical outcomes of patients presenting with ST-segment elevation acute myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (PCI) using drug-eluting stents (DES) or bare-metal stents (BMS). Various points should be considered when comparing the clinical and angiographic performance of these stents in STEMI patients. One is the safety of DES in the context of thrombotic coronary occlusion. Most patients have total occlusion, which means not only a greater thrombotic burden but also greater difficulty in assessing the diameter of vessels that are often spastic and with TIMI flow <3, even after dilation. As pointed out by Brito et al., the safety of DES in such cases has been demonstrated in various registries and randomized trials. Another point is the poor performance of BMS compared to DES with regard to target-lesion revascularization (TLR) and target vessel revascularization (TVR). Based on angiographic evidence, even when the vessels are larger and the lesions are focal and are rarely calcified or diffuse, randomized trials have shown that sirolimus- and paclitaxel-eluting stents are associated with less restenosis than BMS.

The most interesting aspects of the article by Brito et al. are the analysis of the final outcome of primary PCI, as assessed by TIMI frame count, myocardial blush grade, peak troponin and ST-segment resolution, as well as the discussion of the clinical and angiographic differences

between the two groups that led the operator to choose DES or BMS.

This choice is critical and complex. Many primary PCIs are performed in emergency conditions, with incomplete knowledge of the patient’s history and compliance with therapy, in patients who are anxious and in pain, and in some cases in shock and with sensory alterations.

DES were chosen more often in patients with involvement of the left anterior descending artery, those requiring treatment of more vessels and needing complete revascularization, and those with smaller diameter vessels and stents. These baseline characteristics depended on the operator’s decision to use DES, in order to reduce restenosis. The fact that patients treated with DES were younger may be due to the expectation that older patients would have more unknown comorbidities that could increase the risk of prolonged dual antiplatelet therapy following DES implantation. Interestingly, lesion (stent) length was not a criterion for choosing DES, and the number of stents implanted was no higher in the DES group, even though more vessels were treated in these patients, which implies that more than one stent was more often implanted in the same vessel in the BMS group; overlapping of these stents is known to be a factor promoting restenosis. The presence of diabetes was also not a criterion in the choice of DES, which may be due to incomplete clinical assessment prior to PCI, as mentioned above. This baseline difference between the groups inevitably influenced outcomes in terms of TLR and TVR.

Outcomes for BMS were similar to those for DES in terms of TLR and TVR at one-year follow-up, but in my opinion this was because of the criteria used at the time of implantation.

These baseline differences between the two populations may also have influenced the analysis of the final result of primary PCI, but less than TLR and TVR. No information is given concerning the percentage of cases of direct stenting, thrombus aspiration, or the types of DES and BMS

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used. However, the agreement found between the angiographic, electrocardiographic and laboratory data is a good indication of how well both stent types performed and the safety of DES; it also implies that the type of stent is irrelevant to the final outcome, with a similar incidence of the combined outcome of death, reinfarction and TLR observed during follow-up.

It is worth noting that follow-up was significantly longer in the DES group (29.5 months vs. 17.3 months in the BMS group,  $p=0.004$ ), during which there were no cases of late stent thrombosis, which reinforces the safety profile of DES. However, the duration of dual antiplatelet therapy is not given for either group. The idea that STEMI patients are vulnerable to late thrombosis when treated with DES is thus losing ground, which supports interventional cardiology in the treatment of complex patients.

More than with PCI in patients with stable angina, it is important to assess primary PCI not only by angiographic results. As in the study by Brito et al., it should also be evaluated by resolution of pain and ST segment, TIMI flow, final myocardial blush grade and enzyme curve. We do not know what the results would have been if these patients had been randomized to receive DES or BMS, since this was not the study's methodology, but this is irrelevant. What we can conclude is that whether DES or BMS were used, the results were good; the stent is after all only one tool in the treatment of patients with STEMI.

### **Conflicts of interest**

The authors have no conflicts of interest to declare.