(2.15 ± 0.27 mm vs. 2.25 ± 0.24 mm; $p = 0.003$). The majority (89%) of lesions involved vessels with a diameter<2.5 mm. Bailout stenting was required in 20% of lesions in the DEB group. The primary endpoint of in-stent (in-balloon) late loss was significantly less with DEB compared with PES (0.08 ± 0.38 mm vs. 0.29 ± 0.44 mm; difference −0.21; 95% CI: −0.34 to −0.09; p noninferiority < 0.001; p superiority = 0.001). At 6 months, DEB and PES were associated with similar rates of angiographic restenosis (8.9% vs. 14.1%; $p = 0.25$), target lesion revascularization (4.4% vs. 7.6%; $p = 0.37$), and MACE (7.8% vs. 13.2%; $p = 0.77$).

Conclusions: Treatment of small-vessel disease with a paclitaxel DEB was associated with less angiographic late loss and similar rates of restenosis and revascularization as a PES.

1. Perspective

The main findings of the BELLO trial are: in patients with small vessel CAD, the **IN.PACT Falcon** paclitaxel-coated DEB is non-inferior to PES (**Taxus Liberte**) in suppressing neointimal proliferation as measured by angiographic late loss at 6 months. Also the rates of MACE, MI and TLR were similar between the two groups. However, these results were obtained with the need to implant BMS in 20% of patients randomized to DEB. Though the validity of late loss as a primary endpoint may be questioned; two recent trials (one in patients with ISR and the other in AMI patients) had used this as an endpoint. Despite the suboptimal acute angiographic result as measured by final MLD and acute gain, DEB was associated with similar end-points at 6 months as PES. This is probably explained by the fact that the lower acute gain with DEB was counterbalanced by the very low late loss resulting in a net lumen gain, which was comparable in both groups.

DEB can provide a therapeutic option in very small vessels (<2.25 mm), which comprised more than half of the lesions treated in this study, for which DES sizes are not available.

Till the results of the BELLO trial were out, limited data was available regarding DEB in de-novo small-vessel disease. The only other published study, PICCOLETO was a small single-center trial that randomized 60 patients with small-vessel disease (≤2.75 mm) to the **Dior** paclitaxel-coated balloon or PES. This trial was stopped prematurely because of the clear superiority of PES both in terms of angiographic restenosis and MACE. Although the Dior and IN.PACT Falcon DEB are both coated with paclitaxel at 3 μg/mm^2, these technologies are not comparable and differ significantly in regards to balloon technology, drug-coating process, excipient used as drug carrier and transport facilitator to the vessel wall. As has been demonstrated with DES platforms, clinical outcomes may be very different, despite elution of the same drug. The only other DEB data available on small vessel disease is the PEPCAD-I SVD study. In this prospective, nonrandomized multicentre study, 122 patients with CAD in 2.25–2.8 mm diameter vessels were treated with **SeQuent Please** paclitaxel-coated DEB. This study demonstrated a higher late loss in lesions treated with a combination of DEB and BMS, especially if geographic mismatch occurred (i.e., stent implanted in an area that was not treated with DEB). In the BELLO study, this geographic mismatch has been carefully avoided, which might explain the lower late loss rates even when a BMS was needed to be used. The lower late loss in patients treated only with DEB in the present study can also be explained by the fact that less complex lesions were selected, where the possibility of requirement of additional stenting was low. It is also important to note that patients treated with DEB alone did not experience any thrombotic event, acute vessel closure or higher rate of periprocedural MI.

In my opinion, after the results of BELLO trial, DEB can be used as an adjunctive tool but not as a substitute to DES. In addition to its proven role in **in-stent restenosis**, DEB can be used in circumstances in which the operator may not be fully confident to deploy a DES such as in the treatment of lesions in **very small vessels** (**< 2.25 mm diameter**) as DES is available only upto 2.25 mm. Till now we do not have any treatment strategy for such vessels which can be an important diagonal, obtuse marginal, PDA or PLV branches. Also it can be thought of as a strategy in **very long lesions** to avoid the excessive number of DES that may be required. However, till such time that larger studies with hard clinical end-points become available, it would not be wise to use DEB in lesions of ≥2.5 mm diameter as DES are available for these sizes and with newer generation DES available, the restenosis rates and MACE are also much lower.

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Massimo Zecchin, Marco Merlo, Alberto Pivetta, Giulia Barbati, Cristina Lutman, Dario Gregori, Laura Vitali Serdoz, Stefano Bardari, Silvia Magnani, Andrea Di Lenarda, Alessandro Proclemer, Gianfranco Sinagra, How can optimization of medical treatment avoid unnecessary implantable cardioverter-defibrillator implantations in patients with idiopathic dilated cardiomyopathy presenting with "SCD-HeFT Criteria?". Am. J. Cardiol. 109 (2012) 729–735

Background: To assess the proportion and long-term outcomes of patients with idiopathic dilated cardiomyopathy and potential indications for implantable cardioverter-defibrillator before and after optimization of medical treatment, 503 consecutive patients with idiopathic dilated cardiomyopathy were evaluated from 1988 to 2006.

Results: A total of 245 patients (49%) satisfied the "Sudden Cardiac Death in Heart Failure Trial (SCD-HeFT) criteria," defined as a left ventricular ejection fraction of <0.35 and New York Heart Association (NYHA) class II–III on registration. Among these, 162 (group A) were re-evaluated 5.4 ± 2 months later with concurrent beta blockers and angiotensin-converting enzyme inhibitor use. Of the 162 patients, 50 (31%) still had "SCD-HeFT criteria" (group A1), 109 (67%) had an improved left ventricular ejection fraction and/or New York Heart Association class (group A2), and 3 (2%) were in NYHA class IV. Of the 227

patients without baseline "SCD-HeFT criteria" (left ventricular ejection fraction >0.35 or NYHA class I), 125 were evaluated after 5.5 ± 2 months. Of these 227 patients, 13 (10%) developed "SCD-HeFT criteria" (group B1), 111 (89%) remained without "SCD-HeFT criteria" (group B2), and 1 (1%) had worsened to NYHA class IV. The 10-year mortality/heart transplantation and sudden death/sustained ventricular arrhythmia rate was 57% and 37% in group A1, 23% and 20% in group A2 ($p < 0.001$ for mortality/heart transplantation and $p - 0.014$ for sudden death/sustained ventricular arrhythmia vs. group A1), 45% and 41% in group B1 ($p -$ NS vs. group A1), 16% and 14% in group B2 ($p -$ NS vs. group A2), respectively.

Conclusion: Two thirds of patients with idiopathic dilated cardiomyopathy and "SCD-HeFT criteria" at presentation did not maintain implantable cardioverter-defibrillator indications 3–9 months later with optimal medical therapy. Their long-term outcome was excellent, similar to that observed for patients who had never met the "SCD-HeFT criteria."

1. Perspective

Since the publication of the SCD-HeFT and the DEFINITE trials, treatment with ICD for the primary prevention of sudden cardiac death (SCD) has been extended to patients with idiopathic dilated cardiomyopathy (IDC), who have a LVEF of ≤0.35 and who are classified as NYHA II or III ("SCD-HeFT criteria," class I B indication). The appropriate timing for ICD implantation, however, is still uncertain. Current guidelines suggest that an ICD should be considered in addition to medical therapy, but many patients are treated with an ICD without evidence-based indications, mainly because of newly diagnosed heart failure and before treatment optimization. This study evaluated the proportion of patients with and without potential indications for ICD implantation at presentation and the long-term prognosis of patients with initial ICD indications but who improved after optimization of medical treatment. It also compared the long-term outcome of "improved" patients to those maintaining "SCD-HeFT criteria" and those who never met "SCD-HeFT criteria."

This trial included only patients who were not on beta blockers. After initial assessment, optimization of medical treatment was achieved with gradually up-titrating doses of beta blockers and ACEI/ARB at the highest tolerated dose over a period of 3–9 months.

The main results of the present study are: 1) 50% patients had SCD-HeFT criteria at first assessment and would have otherwise received an ICD. 2) 2/3rd of patients with SCD-HeFT criteria at baseline "improved" and no longer maintained SCD-HeFT criteria 5.5 months after starting beta blocker and ACEI treatment. 3) The long-term SCD were similar in "improved" patients and in those without SCD-HeFT criteria, suggesting ICD implantation should not be done in most patients with low LVEF and HF symptoms before optimization of medical treatment. 4) SCD (4 patients – 2%) was similar in patients both with and without SCD-HeFT criteria before second evaluation at 3–9 months, confirming the difficulty of stratifying risk of SCD at first evaluation.

This study emphasizes how important is the optimization of medical therapy in patients initially presenting with ICD indications and ICD implantation can be avoided in the majority of such patients. Even in USA, nearly 22.5% of patients with an ICD did not meet the evidence-based criteria for implantation, mainly because of newly diagnosed HF (62%). Such unnecessary ICD implantations should be avoided because of economic issues (especially in a developing country like India), the risk of complications associated with implantation and inappropriate shocks (in ~25% of patients).

What then is the waiting period for ICD implantation after onset of HF symptoms in patients with LVEF ≤35%? Well, we have no clear-cut answer. Data from DEFINITE trial suggest early ICD implantation (<9 months or even<3 months) is more beneficial while the Cardiomyopathy Trial showed otherwise.

One position could be that at least 3 months are required for up-titration of doses of beta blockers and ACEI while waiting for >9 months could well be unnecessary and potentially harmful. So a mean waiting period of 6 months could be advocated during which we should try and maintain optimally tolerated doses of beta blockers and ACEI/ARB. At 6 months of follow-up, re-assessment of LVEF using Echocardiography/MUGA scan, Holter monitoring to rule out NSVT, EPS study to rule out inducible VF/sustained VT not suppressible by a class I antiarrhythmic drug should be done and patients should be very carefully selected for ICD.

However, a word of caution is that this trial only included patients with idiopathic dilated cardiomyopathy and the results cannot be extrapolated to ischemic cardiomyopathy.

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Evolve trial

Chronic Kidney Disease (CKD) is now considered a risk factor for coronary artery disease. Secondary hyper-parathyroidism, a disorder of mineral metabolism in patients of CKD contributes to extra skeletal calcification including cardiovascular system which is partial responsible for increased risk of cardiovascular disease.[1]

It will not be inappropriate to call parathormone as uremic toxin and level above 600 μg/ml increases the risk of death and cardiovascular reasons. Cinacalcet is a calcimimetic agent which acts by allosteric activation of calcium sensing receptors on Parathyroid tissues. This was approved for hyperparathyroidism secondary to Chronic Renal Failure (CRF) after the effect on reducing parathormone specially in patients on dialysis was shown in multiple randomized trials.[2]

In EVOLVE Trial (Effect of Cinacalcet on Cardiovascular Disease in Patients undergoing Dialysis), *N Engl J Med.* 2012;367:2482–2494, this hypothesis was tested by using Cinacalcet in addition to conventional therapy for CKD