Indian Pacing and Electrophysiology Journal 21 (2021) 88

Contents lists available at ScienceDirect

Indian Pacing and Electrophysiology Journal

journal homepage: www.elsevier.com/locate/IPEJ

Editorial Commentary

SCD following myocardial infarction - Predicting the unpredictable

Sudden death continues to cast an unpredictable shadow of uncertainty in the natural history of patients with both treated and untreated myocardial infarction. The challenges of tackling this clinical problem in India are magnified by affection of myocardial infarction in relatively younger population, delayed presentation, deficiency of timely reperfusion and appropriate revascularization and suboptimal usage of evidenced based medications. All these contribute to a population with large substrates for heart failure and SCD. The cumulative incidence of SCD following MI in India is 4.9%, 6.5%, 8.0%, and 8.9% at 1st month, 1 year, 2 years and 3 years respectively [1].

Over the decades, given the low discharge rates of defibrillators in patients receiving these for primary prevention, the futility of implantation of large number of expensive devices with the attendant complications has been a global clinical concern. The possibility of further stratifying this population in an effort to decisively identify those who may not benefit for this therapy has been a focused research question. This question needs to be pursued with more aggressiveness and seriousness in this part of the world as paucity of resources both at national and individual levels seriously limit the universal implementation of guideline based device therapy.

Selvaraj et al. in their study of 58 patients with MADIT II inclusion criteria, used 14 parameters which included Heart rate Variability (HRV), Invasive & non-invasive Heart rate Turbulence (HRT), Micro T wave Alternans (MTWA) apart from PVC count, Non Sustained VT & LVEF in an attempt to predict SCD [2]. Though NSVT & LVEF predicted total mortality, LVEF was found to be the only multivariate predictor of sudden death. This paper reiterates the negative results of various non-invasive markers that have been explored as potential predictors of SCD beyond LVEF. Event rates in this study were limited possibly by controlled optimal medical management and usage of drugs like Valsartan-saccubitril may have reduced this numbers further. This small event rates with the large number of predictors studied may have impacted the results.

The question that needs to be answered is have we reached end of the road in our quest to find an equally if not better markers that LVEF? It is prudent to look at other markers that may be more effective in predicting occurrence of malignant arrhythmias in this subset of patients. Recent data on substrate delineation by cardiac MRI (CMRI) shows effectiveness of this tool in predicting occurrence of cardiovascular (CV) events in these patients [3–5]. CMRI is an excellent non-invasive tool that can demonstrate the burden and distribution of myocardial scar which is the electro-pathological basis of circuits of Ventricular tachycardia. A recent study from India has shown the effectiveness of LGE identification and quantification in predicting CV events in heart failure population with LVEF $\leq$40%. In both ischemic and non-ischemic subsets, LGE assessment showed incremental value in predicting SCD, total mortality and heart failure admissions [6]. Genetic markers though in the infancy of their routine clinical application could be a potential marker in the future. A small study showed an existence of genetic markers generally found in channelopathies in patients with ischemic cardiomyopathy and VT storm. [7] A genetically predisposed final common pathway of SCD may potentially exist.

Most of SCD (>70%) following MI in India occur in the first 1 year and its imperative that all research efforts are directed to investigate and identify the markers for this clinical event. Research in this area should come from parts of the world where it is most needed and Selvaraj et al. should be congratulated for their work as it sows the seeds for more focused work in his area.

References

[1] Rao HB, Sastry BK, Korabathina R, Raju KP. Country. Heart Asia 2012 Jan 1;4(1):83–9.
[2] Population. Selvaraj RJ, Rangasamy S, Priya D, Nair S, Pillai AA, Satheesh S, Jayaraman Indian Pacing Electrophysiology J. 2020 Dec 19:S0972-6292(20)30154-6.Iles L, Pfluger H, Lefkovits L, et al. Myocardial fibrosis predicts appropriate device therapy in patients with implantable cardioverter-defibrillators for primary prevention of sudden cardiac death. J Am Coll Cardiol 2011; 57:821–828.
[3] Schelbert EB. Myocardial scar and fibrosis the ultimate mediator of outcomes? Heart Fail Clin 2019 Apr;15(2):179–89.
[4] Klem I, Weinsaft JW, Bahnson TD, et al. Assessment of myocardial scarring improves risk k stratification in patients evaluated for cardiac defibrillator implantation. J Am Coll Cardiol 2012 Jul 31;60(5):408–20.
[5] Kolluru, J. Srikala, H.N. Rao et al., Incremental value of Late Gadolinium Enhancement by Cardiac MRI in risk stratification of heart failure patients with moderate and severe LV dysfunction, Indian Heart Journal. In print https://doi.org/10.1016/j.ihj.2020.11.150.
[6] Rangaraju A, Krishnan S, Aparna G, Sankaran S, Mannan AU, Rao BH. Tachycardia. Indian Pacing Electrophysiol J 2018 May-Jun;18(3):91–4.

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Peer review under responsibility of Indian Heart Rhythm Society.

https://doi.org/10.1016/j.ipej.2021.02.012