

Should Old Acquaintance be Forgotten: *Auld Lang Syne* Q Waves!

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In the relentless juggernaut of progress in Imaging, some old tried and time tested diagnostic methods are in danger of appearing stodgy and unappealing. Some such older methods deservedly need to fade away in the passage of time while others may cling beyond reasonable use due to nostalgia. However, every now and then, the new kid on the block can reveal an unexpected redeeming feature to older tests, and this raises interesting new questions. Proponents may use this nugget to highlight ability to obtain useful information without the need for sophisticated testing, and thus, cost containment. Others may just consider this a minor nugget, no match for other more detailed information provided by sophisticated testing, and hence justify its high price tag. One such paper and accompanying editorial comment in this issue of *iJACC* (1,2) exemplifies this contention. In a large number of patients undergoing primary percutaneous coronary intervention (PCI), the investigators assessed whether Q-wave regression a few months after PCI predicted improvement in left ventricular (LV) ejection fraction (EF), infarct size, and LV remodeling over time. While confirming that electrocardiogram (ECG) criteria of Q-wave myocardial infarction (MI) correlated with infarct size on cardiac magnetic resonance (CMR), their long-term follow-up allowed them to show that regression of Q waves was correlated with better EF, despite similar initial infarct size. The authors make two interesting observations: 1) the association of Q waves with infarct size is the strongest when using the “classic” Q-wave criteria, and 2) Q-wave regression is associated with greater improvement in CMR-verified LVEF.

What did the reviewers and editors find attractive in this paper? Is it partly out of nostalgia for the ECG—a technique that was the workhorse during the formative years of training for the editors and clinicians of our vintage? Or, is it to score a point against the generational gap that not everything we grew up with has become irrelevant with the advent of new technology. While we value exploring for information by any technique, we chose to publish this simple paper because we saw merit in marrying the old versus the new, as a potent tool to understand what a given sign means rather than just use it for diagnosis. The fact that classic definition for Q waves was better than the newer ones for the assessment of infarct size is a reassuring, clinically useable, nugget. Previous papers had shown a clear association between Q waves and infarct size—in area or transmural depth. The current paper offers longer follow up and attempts to correlate clinical findings with serial CMR studies. The correlation between Q-wave regression and improvement in function despite similar baseline infarct size is intriguing and not well reported in the prior literature.

And, how does this advance the field? A rational skeptic would correctly argue that this strategy of using simple criteria as a surrogate for more definitive data is a *passé* and masks a cost containment agenda. It is best to obtain the needed information, like improved EF or degree of remodeling, directly with the best available test, and not guess imperfectly with less accurate tests. It could further be argued that even if the Q-wave regression correlates with better functional outcome, it will only make a minimal difference to patient care and will not influence the use of heart failure medications and a need for implantable cardioverter-defibrillator, etc. On the other hand, it is nice to understand what

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the changes in Q waves mean. In a test done routinely, the disappearance of Q waves in approximately one-fifth of patients is associated with favorable news. Regression of Q waves 4 months after the primary PCI predicted a 2-year EF. Furthermore, the paper validates the classic definition of Q waves for correlation with infarct size at the baseline. Finally, as any good research must do, opens up a whole new debate about the pathophysiological basis of the disappearance of Q waves and its relationship with the residual myocardium and its proclivity to arrhythmias. It would have been nicer had the authors offered information about late gadolinium enhancement at the later time points. The latter would have provided a more definitive explanation about infarct shrinkage and loss of Q waves. It also raises interesting questions about the relationship to microvascular obstruction (MVO) in that, despite similar initial MI size, regression of Q waves might be related to lack of significant MVO at baseline. There is modest information from the thrombolytic era on how therapy changes Q waves. However, this paper from the primary PCI era adds to the literature that a prompt restoration of blood supply to the insulted myocardium confirms the relation between resolution of Q-wave and better functional outcome.

We have occasionally used the Editor's Page to provide a window into our decision making process at the weekly editorial board meetings, and this paper might be one such example. The reader will clearly notice that this paper does not fit the usual genre of most current publications in *JACC: Cardiovascular Imaging*, comprising large and thoroughly documented investigations of sophisticated imaging technology. For most of us on the

editorial board, the beauty of the science is in its variety and as yet undiscovered opportunity; the lowly Q-wave after all has had a large impact in cardiology, including classification of MI based on its presence or absence, its use in determining window of myocardial salvage after MI, and its ability to localize ventricular morphology and location. Newer ways of looking at the ECG might uncover the likelihood of sudden cardiac death. We strongly believe that not everything we publish should be an unemotional randomized clinical trial or a paper found important only because of its likely citation impact. As expected, there was robust discussion about this paper in our editorial meeting and the group was divided on its priority for the readership of the *Journal*. Moreover, we applied the usual *so what* filter to this paper and found differing degrees of support. However, there was sufficient interest and we worked with the authors to make it more clinically relevant for our readers. We do recognize that publication in a journal is necessarily colored by the editorial philosophy and some readers likely will disagree with what we feel is worthwhile to publish. However, we also believe that the corpus of science should be diverse enough for people with different perspectives to take an idea, apply their own perspective, and run with it in yet another direction. This, after all, is the *what is possible* factor in science and an area where we feel that the editors can provide value. Although a machine can far better predict the citability of a paper, only a human editor could provide the emotional aspect. This remains valuable in the art of science and, at a more personal level, it is one of the more satisfying roles of being an editor.

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