ST/T ratio in early repolarization variant and acute pericarditis

This letter is in response to the article by Riera et al. entitled "Early repolarization variant: Epidemiological aspects, mechanism, and differential diagnosis" The article is available online as in press article *Cardiology Journal* 2008 (vol. 15).

With much interest I read the review article by Riera et al. [1] in which they comprehensively described the epidemiological aspects, mechanism, and differential diagnosis of early repolarization variant (ERV). The differential diagnosis of ERV with ST segment elevation syndromes and the J-wave syndrome was really useful to me as a clinician and as a researcher. However, I have few comments about Figure 5 in the article.

As an example on how to use the ST/T ratio in V6 to differentiate between ERV and acute pericarditis, the authors presented two electrocardiograms (ECGs) in Figure 5, one was labeled as acute pericarditis and the other was labeled as ERV. In both ECGs the authors measured the ST and T amplitudes, calculated the ST/T ratios and came to diagnostic conclusions based on what is suggested by Ginzton and Laks [2]. I think the critical point in measuring the amplitude of ECG waveforms (such as ST or T) is to precisely define the isoelectric point from which measurements should start. The point where P wave starts is the widely accepted isoelectric point [3]. Subsequently, TP line or a line extending from the start of P wave to the start of the P wave of the next beat (if TP line is not perfectly flat) are the widely accepted method of identifying the ECG baseline. In Figure 5, the authors used two different baselines for the two ECGs in the Figure 5, which makes comparison unacceptable. Additionally, both baselines are not considering the start of the P wave as the isoelectric point. If the ST and T waves are to be re-measured considering that the start of P wave is the isoelectric point and the TP line is the ECG baseline, the ECG in Figure 5 which was labeled as acute pericarditis will be typically ERV using the ST/T criterion, which I think is the case. Other clues that support what I think are the depressed PR segment which occurs in 38% of ERV cases and the peaked asymmetrical T wave [4].

Regarding to the other ECG in Figure 5 which was labeled as ERV, I agree with the authors that this is a case of ERV, but not because of the ST/T criterion as they mentioned. Considering that the start of P wave is the isoelectric point, the ST in that ECG is not elevated at all, which makes using the ST/T invalid. Traditionally, ST elevation in ERV is more manifest in mid-chest leads not V6 [5]. Using ST/T criterion in V6 only was probably due to the fact that if ST is elevated in V6, most probably it will be markedly elevated in the mid-chest leads which is the case in ERV. Despite lack of ST elevation in V6, I thought ERV is the right diagnosis because of the presence of a slurred downstroke of the R wave which is very specific to ERV, and the peaked T wave [5].

In conclusion, in contrast to what is reported by the authors in Figure 5, I think that the ECG labeled as acute pericarditis is actually ERV. On the other hand, although I agree with the authors that the other ECG shows ERV, I do not agree with them regarding the reason upon which the ECG was diagnosed as such. Inaccurate consideration of the isoelectric point by the authors is the main reason for an inaccurate conclusion made.

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