

Separation ECG Findings and Physiologic Term 'Early Repolarization'

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INTRODUCTION

Early repolarization (ER) has been reported to occur upto 25% in men and 16% in women and regarded as benign condition [1]. However, Haïssaguerre and colleagues suggested an increased prevalence of ER in patients with ventricular fibrillation using case-control study. Hazard ratio was 2.1 (95% of confidence interval 1.2-3.5) in 206 subjects compared with 412 control subjects. [2]. However, followed large studies showed mixed results, so there is no conclusive consensus yet. While, previous definition of ER have been criticized, because various studies used heterogeneous definition, included as follows; J-wave or J-point elevation, QRS complex notching or slurring with or without concomitant ST-segment elevation [3, 4].

To manage this issue, American heart association (AHA) provided concise overview of the early repolarization (ER) pattern (ERP) which confused physicians for a long time [5]. In shortly, they proposed the use of ERP as two separated form; (1) ER with ST-segment elevation in the absence of chest pain or (2) ER with terminal QRS slur/notch. With regard this brilliant work, I show great respect to the authors.

The separation between ER with ST elevation and ER without ST elevation (equal to ER with terminal QRS slur/notch) seems appropriate considering difference of prevalence of two types [6]. According to a report of Heng et al, although it was not referenced in the AHA statement, they found 438 J-point elevations among 1,496 adults. ST elevation (≥ 0.1 mV) ER (with or without QRS slur/notch) was 8.0% among them, while non ST elevation (< 0.1 mV) ER (with QRS slur/notch) was 76.8% and mixed pattern was 16.2%. This considerable difference of

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prevalence should be noted. This difference implies that there would be different mechanisms related with ST elevation ER and non ST elevation ER.

However, the attempt to recognize traditional ERP distinctly leads us into one question. Why should we keep using ER or ERP rather than using just ECG findings? Under condition of non-existence of chest pain equivalent, we can simply say like this; (1) ST elevation only, (2) ST elevation with terminal QRS notch, (3) ST elevation with terminal QRS slur (4) terminal QRS notch, and (5) terminal QRS slur. Currently, all five ECG findings are assumptive manifestations of early repolarization, or regional heterogeneity of repolarization as described in the AHA statement. However, biological direct link between pathophysiology and ECG findings remains incompletely understood yet. It makes sense that aforementioned five ECG findings are demonstrations of unidentified pathophysiologies during early repolarization phase of myocardium. But it is questionable to say that aforementioned five ECG findings are ERP.

In my opinion, ERP is a result of terminology confusion which tried to deal with ECG finding and pathophysiology at once. It seems that some sort of ECG findings under no CPE have been traditionally bound into 'ERP'. The authors seemed to know it because they described the ERP as an umbrella term. Heterogeneity of ERP should be disjoint into individual separated ECG findings, and five different ECG findings should be treated as distinct entities. But, it seems to be so far to date. An approach dividing traditional ERP into ST elevated ER and non ST elevated ER which authors suggested will be a first step for further researches for the clarification of aforementioned five ECG findings during ER phase of myocardium.

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