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Artifacts in the Electrocardiograms Recorded Using a Smartwatch

Akıllı Saat Kullanılarak Kaydedilen Elektrokardiyogramlardaki Hatalar

LETTER TO THE EDITOR
EDİTÖRE MEKTUP

We have read with interest the recent article from Göksel Çinier et al[1] reporting the use of the Apple Watch in the diagnosis of paroxysmal tachycardia.

The authors describe a P wave after the QRS with a short RP interval as a diagnostic clue suggesting the presence of reentrant tachycardia.

I have found, frequently, artifactual waves after the QRS in normal subjects. The particular filtering systems of the Apple Watch can cause a peak at the end of the QRS simulating a spurious P, r´, or epsilon wave. This can be clearly appreciated in the electrocardiogram (ECG) of a normal subject in panel A of the Figure 1. This kind of distortion of a signal around a discontinuity is called Gibbs–Wilbraham phenomenon or ringing artifact.[2] In some cases, especially in precordial leads recorded placing the watch in the chest,[3] we have seen an extreme manifestation of this artifact distorting a significant part of the ST-segment (panel B of the Figure 1).

In the case reported by Göksel Çinier et al[1], it will be very interesting to know if the apparent P wave is still present in the AW recorded in sinus rhythm (artifactual P wave) or has disappeared after the ablation (real retrograde P wave).

We agree with the authors that we are entering a new era in electrocardiography. The number of patients wearing a portable ECG recorder is steeply increasing and now, there are more smartwatches than conventional electrocardiographs worldwide. We, as clinicians, must be aware that the filtering algorithms of these portable electrocardiographs are very different from the filters implemented in the standard electrocardiographs and we should be alert for the presence of artifacts or distorted signals.

Figure 1. (A): Artifact simulating a P o r´ wave in a normal subject. (B) Bizarre distortion of the ST-segment in a precordial lead (CR5) of a 6-year-old normal child.

Declaration of Interests: The authors declare that they have no competing interest.

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