

Assessing the Utility of Smartwatches in Detecting Transient Bradyarrhythmia: The Brady-Watch study

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BACKGROUND

- Smartwatches (SWs) with heart rate (HR) monitoring technology are used increasingly for arrhythmia detection.
- However, their sensitivity for detecting transient bradyarrhythmia has not been studied or published
- This may have important implications for the utility of SWs in the evaluation of unexplained syncope

METHODS

- This was a prospective observational study of 60 patients undergoing EP procedures or pacemaker care.
- Two commercially available SWs (Apple Watch Series 10 and Samsung Galaxy Watch7) were worn simultaneously by each participant.
- In Arm 1 (n=30), CIED patients with no underlying rhythm were temporarily reprogrammed to VVI-30 for 30 seconds to simulate transient bradycardia.
- In Arm 2 (n=30), patients undergoing device generator change or adenosine testing during AF ablation wore SWs during clinically confirmed asystolic pauses lasting ≥ 4 seconds.
- The primary endpoint was SW detection of any HR < 40 bpm within 5 minutes of the bradycardic event. The secondary endpoint was an automated notification of bradycardia on the smartwatch.

Conclusion: Smartwatches do not detect transient bradyarrhythmia in heart rate history. These findings highlight the limited role of these watches in the workup of unexplained syncope.



Question:

Can smartwatches reliably detect short-duration sudden bradycardic events?



Cohort:

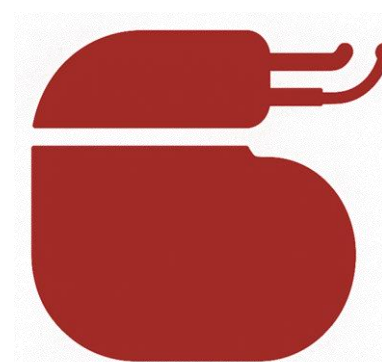
60 patients undergoing care in the pacing and electrophysiology service.



Intervention:

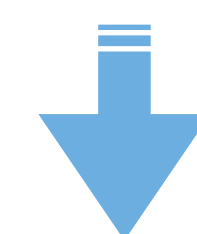
Two smartwatches were placed during controlled periods of profound bradycardia

RESULTS



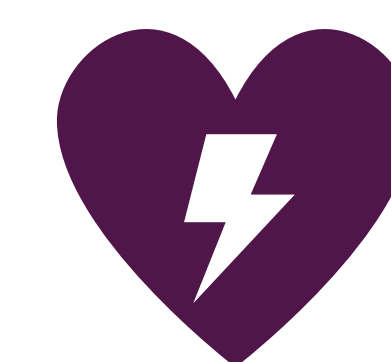
Arm 1: Bradycardic pacing (n=30)

Pacing check patients with no underlying ventricular rhythm: programmed to VVI 30 for 30s



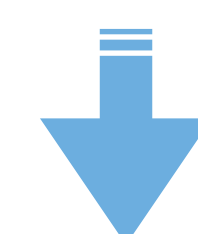
30 clinically confirmed bradycardia (Mean 32 ± 2 bpm)

Zero events with HR < 40 detected on either watch



Arm 2: Asystolic pauses (n=30)

Adenosine testing during ablation or PPM generator changes resulting in asystole



42 asystolic events (Median 6.1s, IQR 4.9-7.0)

Zero events with HR < 40 detected on either watch

Bradycardia pacing arm

- 30 patients were reprogrammed to transient bradycardia lasting 30s
- Smartwatch HR history checked to see if bradycardia was detected.
- 0/30 patients had a Smartwatch register a HR < 40

Asystole Arm

- 30 patients wore smartwatches during procedures (Ablation with adenosine testing, pacemaker generator changes) where short asystolic events were expected to occur.
- 0/30 patients had a smartwatch register a HR < 30