What is the Role of Telemetry in Patients with Pacemakers?

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Article ID: WMC001975
Article Type: My opinion
Article URL: http://www.webmedcentral.com/article_view/1975
Subject Categories: CARDIOLOGY
Keywords: Cardiac Telemetry, Pacemakers, Pulseless Electrical Activity

How to cite the article: Gupta D , Shrestha A , Orlewicz M . What is the Role of Telemetry in Patients with Pacemakers? . WebmedCentral CARDIOLOGY 2011;2(6):WMC001975
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My Opinion

Cardiac telemetry has been used inappropriately due to the lack of evidence based guidelines for initiation and discontinuation of the telemetry [1-4]. Additionally, cardiac telemetry in itself is imperfect for monitoring the mechanical activity of the heart which is an essential monitoring parameter for patients with permanent pacemaker. The pacemakers can easily override deteriorating intrinsic rhythms and replace it with pacemaker rhythm even though the cause of loss of intrinsic rhythm may be interfering with the cardiac contractility. Even the Closed Loop Stimulation (CLS) in the pacemakers by Biotronik® (Berlin, Germany) with capability to measure the intra-cardiac impedance for early detection and response to the deterioration in contractility does not overcome the shortcoming of cardiac monitoring by inpatient telemetry because the Biotronik® Home Monitoring is yet not synchronized in real time to the inpatient cardiac telemetry. Therefore, pulseless electrical activity (PEA) remains a big challenge for cardiac telemetry. PEA usually deteriorates into bradycardia (slow PEA) that rapidly converts into asystole because the blood supply to the cardiac conduction system has been abruptly shut off by the absence of contractility. However, when the patient has a pacemaker, the pacemaker spikes override the slow PEA rhythm with no display of impending/ongoing asystole that can go unnoticed on remote telemetry before the patient’s physical condition is reassessed and reviewed by other means. To avert this life-threatening scenario, it seems prudent to simultaneously telemonitor cardiac contractility by other means [5] including but not limited to intra-arterial catheter (IAC) waveform, continuous echocardiography (ECHO) and pulmonary artery catheter (PAC) waveform. However, these invasive monitoring devices require patient’s continuous stay in intensive/intermediate care unit. Therefore, the most amenable solution for transferring the patients with pacemakers to floor beds is that cardiac telemetry should be integrated with continuous wireless monitoring of non-invasive photoplethysmograph and/or respiration because photoplethysmograph waveform and acoustic respiration monitoring communicate the global effect of loss of cardiac contractility. This integrated monitoring will keep the patients with permanent pacemakers safe, mobile and comfortable outside the cost-ineffective domains of the modern day intensive care units.

References

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