Implantable Loop recorders: Sensitive but not Specific

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Introduction: Implantable loop recorders (ILRs) are useful long-term monitors to detect arrhythmias in real time with remote monitoring. However, false positive (FP) alerts can add to significant data burden and personnel time.

Methods: We conducted a retrospective review of all alerts recorded for patients between January 1, 2018 to December 5, 2018 at a single institution. EGMs for each event were manually reviewed to confirm if these events were true and appropriately classified. Events were set to alert if pauses were >3 seconds or for bradycardia <40bpm, tachycardia > 170bpm or atrial fibrillation.

Result: There were 30 patients with 19 Medtronic Reveal LINQ ILRs and 11 St Jude CONFIRM Rx ILRs. There were a total of 1957 events with 263 alerts (mean of 13 alerts/pt) triggered by LINQ ILRs and 1690 alerts (mean of 153/pt) triggered by CONFIRM ILRs. These included 352 events classified as tachycardia, 344 events as bradycardia, 322 alerts as atrial fibrillation (AF), and 939 pauses. Of these only 493 alerts were appropriately classified (true positive 25%) and 1464 events (75%) were false positive. The FP rate was 99.8% for pauses recorded, 98% for AF and 61% for bradycardia. All tachycardia episodes were correctly classified. The FP rate was significantly higher for CONFIRM devices (77%, n=1297/1690) than for LINQ (62%, n=163/262, p = 0.0467) ILRs.

Conclusion: The ILRs have a high false positive alert rate, especially in detecting pauses and AF. Manual confirmation of ILR alerts is necessary, adding a significant burden for the device clinic personnel and physicians. Further refinement of detection algorithms is needed to improve specificity. Physicians should currently review the EGMs prior to initiating any therapy.