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Inhibition of the Oversensing of Cardiac Pacemakers in Chest CT

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ABSTRACT

Objectives: The purpose of this study is to identify how to manage oversensing of pacemakers in chest CT. **Methods:** Four different models of pacemakers were examined to select the pacemaker generating oversensing. To the pacemaker with oversensing, intermittent switching X-ray was exposed using ECG-gated CT helical scan system at prospective CTA mode. IVY Model was used to synchronize the ECG. Only during in the alert period that is non-refractory and sensing is available, intermittent switching X-ray (300 msec/sec) was exposed in chest CT. For comparison, the same intermittent switching X-ray (300 msec/sec) was exposed in the refractory period when sensing was not available. **Results:** Oversensing was detected only in one of the four pacemakers tested. In this pacemaker, oversensing was generated by exposure of the intermittent switching X-ray in the alert (non-refractory) period, but oversensing was not observed in the refractory period. **Conclusion:** A pacemaker has alert and refractory periods. Oversensing of a pacemaker was found to be inhibited by selective ECG-synchronized exposure in the refractory period. Since all pacemakers have the refractory period, the results of this study can be widely applied to the patients with pacemakers in chest CT, and their chest CT can be operated safely.

KEYWORDS

Cardiac Pacemaker; Refractory Period; Oversensing; Computed Tomography; Chest CT

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