

Multicenter retrospective evaluation of magnetic resonance imaging in pediatric and congenital heart disease patients with cardiac implantable electronic devices *Heart Rhythm 2023*



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Article Summary

- *Introduction*

- Current guidelines do not support the use of MRIs in patients with epicardial or abandoned leads
- 2021 PACES guidelines provide a 2b recommendation for MRIs in patients with abandoned, epicardial or fractured leads (*permitted on individual basis)

- *Objective*

- To evaluate the risk of adverse events among pediatric and ACHD patients undergoing MRI scans

- *Methodology*

- PACES supported study: all pediatric and ACHD patients with epicardial or abandoned leads included
- Primary Outcome:
 - Adverse patient event (death, symptoms, arrhythmia), or
 - Significant changes in lead threshold, impedance or sensing

- *Results*

- 314 patients, 14 institutions, 389 MRIs (CHD 82%)
- 74% of MRIs performed in non-MRI-conditional CIEDs
- Most MRIs (45%) cardiac, followed by brain (33%)
- Symptoms, arrhythmias or CIED changes occurred in 4.9% of scans (6.1% of patients)
 - Warmth (1.3%), tingling and pain (0.8%), pre-syncope and bradycardia (0.3%)
- 4.4% required premature termination, mostly due to artifact
- 3.4% had clinically significant CIED parameter changes (pacing thresholds, impedances changes)



Discussion Talking Points

- *Major Findings*
 - Largest evaluating MRI use in pediatric and ACHD CIED patients
 - “MRIs can be performed in pediatric and ACHD CIED patients with only rare, minor complications”
- *2021 PACES Recommendation*
 - Does this study change the level of evidence for the PACES consensus recommendation?
- *Definition of Parameter Changes*
 - Authors debate what should constitute a “significant change” - %change in baseline or clinician proposed programming change
- *Limitations*
 - Data availability
 - Duration of MRI scans was not collected
 - Variability in MRI protocols and patient selection
 - Selection bias of “less risky” patients



Thank you!

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