Extrinsic Cardiac Compression in a Child Due to Defibrillator Patch Fibrotic Capsular Reaction

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Background

- Epicardial defibrillator patch crinkling can cause patch malfunction, pain, constrictive pericarditis, and even death.
- Transvenous leads are routinely used in adults, but this approach is not as favorable in many small pediatric patients due to vessel size.
- In pediatric patients, epicardial patches or coils are commonly used.
- There are no well-established guidelines for monitoring of epicardial patch configuration.
- We present a case of fully functioning defibrillator patches with significant patch deformation.

Case Description

- 3-year-old female with Timothy syndrome and associated long QT syndrome
- The patient suffered an out-of-hospital cardiac arrest due to ventricular arrhythmia and underwent placement of an ICD with a two epicardial patch system
- Chest radiograph on post-operative day 11 (Figure 1A) showed appropriate patch location and morphology
- The patient had regular electrophysiology follow-up with no clinical concerns.
- Seventeen months after initial AICD placement, the patient had appropriate and successful discharge of her AICD
- Routine surveillance transthoracic echocardiogram obtained during observation after the AICD discharge demonstrated an echodense mass compressing the left ventricular free wall (Figure 2), but normal ventricular function, and no outflow tract obstruction
- Chest radiograph at this time suggested significant crinkling of both AICD patches (Figure 1B)
- Due to the risk of patch-lead fracture and possibility of future coronary compression, revision of the patches was recommended.
- Patch crinkling was felt to be due to tension on the wires with noted movement in position of wires (Figure 3)
- Intraoperatively, severe dense fibrotic capsular reaction was noted involving both patches and extending to the pericardial space and ventricular epicardium.
- Her post-operative course was complicated by recurrent pleural effusion and fever, thought to be infectious versus inflammatory in nature. She was treated with antibiotics and NSAIDs and is doing clinically well at this time.

Conclusion

This case suggests the need for routine assessment of epicardial patch morphology, even in asymptomatic patients.

References: