

CATHETER ABLATION OF PREMATURE VENTRICULAR BEATS IN PEDIATRIC POPULATION: A SINGLE CENTER EXPERIENCE

Simone Gulletta¹ | Pasquale Vergara¹ | Giuseppe D'Angelo¹ | Nicolai Fierro¹ | Paolo Della Bella¹

¹Unità di Aritmologia e Laboratori di Elettrofisiologia, Istituto Scientifico San Raffaele - Milano

BACKGROUND

- Ventricular arrhythmias (VA) are rare in pediatric patients, especially in absence of structural heart disease (SHD).
- Few data are available regarding the invasive VAs treatment with catheter ablation (CA) in pediatric patients and predictors of outcomes have not been fully investigated.

neceived. O September 2020	Revised. 27 Junious y 2021	Accepted: 21 February 202
Received: 8 September 2020	Revised: 29 January 2021	Accepted: 21 February 202

ORIGINAL ARTICLES

WILEY

Etiology is a predictor of recurrence after catheter ablation of ventricular arrhythmias in pediatric patients

Simone Gulletta MD¹ | Pasquale Vergara MD, PhD¹ | Gennaro Vitulano MD¹ | Luca Foppoli Eng¹ | Giuseppe D'Angelo MD¹ | Manuela Cireddu MD¹ | Caterina Bisceglia MD¹ | Gabriele Paglino MD¹ | Simone Sala MD¹ | Cristina Capogrosso MD² | Luigi Pannone MD¹ | Giulio Falasconi MD¹ | Nicola Trevisi MD¹ | Eustachio Agricola MD² | Paolo Della Bella MD¹ |

AIM

Purpose of the study was to describe the clinical presentation, procedural characteristics and outcomes in pediatric patients undergoing catheter ablation (CA) for VA.

STUDY POPULATION

- Methods: experimental prospective study of patients undergoing catheter ablation for Ventricular Tachycardia (VT) and Premature Ventricular Beats (PVBs). Enrollment period: Jul 2010 - Jan 2019.
- Inclusion criteria: age < 18 years at diagnosis | ECG documentation of at least 1 VA episode | At least 1 CA of VA in our Hospital.
- <u>Endpoints</u>: VA recurrence after the last CA procedure and mortality for any cause.
- <u>Procedural outcomes</u>: **95 procedures** were performed in **81** patients, 52 (55%) PVBs and 43 (45%) VT ablations.

Abstract

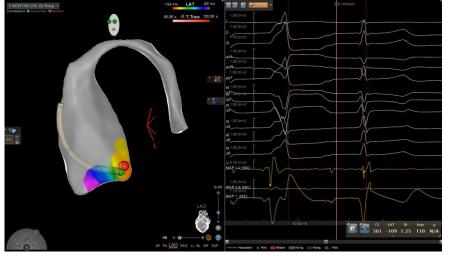
Background: Ventricular arrhythmias (VAs) are rare in pediatric patients, especially in absence of structural heart disease (SHD). Few data are available regarding the invasive VAs treatment with catheter ablation (CA) in pediatric patients and predictors of outcomes have not been fully investigated.

Objective: To describe the clinical presentation, procedural characteristics, and outcomes in pediatric patients undergoing CA for VAs.

Methods: Eighty-one consecutive pediatric patients (58 male [72%], 15.5 ± 2.2 years) treated by CA for ventricular tachycardia (VT) or premature ventricular beats (PVBs) were retrospectively evaluated. Study endpoints were VAs recurrence and mortality for any cause.

Results: Ninety-five procedures were performed in 81 patients, 52 (55%) PVBs and 43 (45%) VT ablations. During a follow-up of 35.0 months (interquartile range = 13.0–71.0), 14 patients (14.7%) had a VA recurrence: 11 (33.3%) patients treated with CA for VT and 3 (6.2%) patients treated for PVBs (p<.001). One patient (1%) died 26 months after the procedure during an electrical storm. Patients with SHD had higher VAs recurrence rate, as compared with idiopathic VAs (pairwise log-rank p<.001). Patients treated with CA for VT had higher VA recurrence rate, as compared with PVB patients (pairwise log-rank p=.002). At Cox multivariate analysis only SHD was an independent predictor of VAs recurrence (hazard ratio = 5.56, 95% confidence interval = 2.68–11.54, p<.001).

Conclusion: CA of VAs is effective and safe in a pediatric population. CA of idiopathic and fascicular VAs are associated with lower recurrence rate, than VAs in the setting of SHD.



FOLLOW-UP

- During a follow-up of 35.0 months (IQR: 13.0-71.0), 14 patients (14.7%) had a VA recurrence: 11 (33.3%) patients treated with CA for VT and 3 (6.2%) patient treated for PVBs (p<0.001).
- One patient (1%) died 26 months after the procedure during an electrical storm.

RESULTS

- Patients treated with CA for VT had higher VA recurrence rate, as compared with PVB patients (Pairwise Log-Rank p = 0.002).
- At Cox multivariate analysis only structural heart disease (SHD) was an independent predictor of VAs recurrence (HR = 5.56, CI 95% 2.68 11.54, p < 0.001).

MAIN FINDINGS OF THE STUDY

- Catheter ablation in pediatric patients is an **effective procedure**, with low recurrence rate (mortality of 1% during FUP).
- Patients treated with CA for VT had higher VA recurrence rate, as compared to PVB patients.
- The absense of SHD appeared to be predictive of higher success rates in patient undergoing VA catheter ablation.