

LETTERS TO THE EDITOR

doi:10.1093/europace/euv091

Published online 20 May 2015

Management of paediatric arrhythmias in Europe

We read with great interest the EP wire report entitled 'How are arrhythmias managed in the paediatric population in Europe? Results of the European Heart Rhythm Survey' by Hernandez-Madrid *et al.*¹ On behalf of the Arrhythmias and Electrophysiology Working Group of the Association for European Pediatric and Congenital Cardiology (AEPC), we would like to comment on the methodology and content of the article.

The EHRA Research Network Centers do not include any of the dedicated paediatric centres providing interventional electrophysiological therapy. This creates a major sampling error and negates the validity of the conclusions of the survey. By including the paediatric centres, we would expect the results to be markedly different. The conclusion that paediatric catheter ablations in Europe are mainly performed by adult electrophysiology teams is not justified.

- (1) It is reported that the majority of the responding centres performed a high volume of invasive EP procedures—in adult patients. No data are presented on the amount of procedures performed on paediatric patients or patients with congenital heart disease. Further, there are no data on the age or size distribution of paediatric patients.
- (2) The fact that most left-sided accessory pathways were ablated using a retrograde approach and that only a small percentage of centres used electroanatomic mapping is again an indication that the sample does not reflect state-of-the-art practice. Most of the dedicated paediatric electrophysiology centres use the transseptal approach for left-sided substrates and the 3D mapping techniques to reduce or completely avoid fluoroscopy. In fact, the paediatric centres are pioneers in radiation reduction practices.^{2–4}
- (3) Cryoablation appears to be underutilized in the survey. In paediatric practice, it is a widely accepted modality, especially in small patients with arrhythmia substrates close to the AV node or to the coronary arteries.^{5,6} In many paediatric centres, it is

the preferred approach for ablation of AV nodal re-entrant tachycardia.

- (4) Success and complication rates are reported to be similar in paediatric and adult patients, but no specific data are provided. As outcome is the crucial parameter for quality of care especially in a setting that may not be completely familiar with the physiology of small patients, we want to emphasize that no statement on this issue can be made unless robust data are provided.
- (5) Pharmacological management of the paediatric tachyarrhythmias as reported in the survey does not reflect common practice in paediatric EP centres, again highlighting the fact that the survey did not include centres specialized in paediatric arrhythmias.
- (6) Significant recent publications in the field of paediatric electrophysiology are not included in the references, such as the HRS/PACES guidelines on management of the asymptomatic WPW patients,⁷ a document that is widely accepted as a reference for management of this condition.
- (7) None of the authors are a dedicated paediatric EP specialist.

We conclude that the survey has been performed from adult electrophysiology perspective and, as such, is very misleading regarding the practice of paediatric electrophysiology in Europe.

References

1. Hernandez-Madrid A, Hocini M, Chen J, Potpara T, Pison L, Blomstrom-Lundqvist C. How are arrhythmias managed in the paediatric population in Europe? Results of the European Heart Rhythm survey. *Europace* 2014; **16**:1852–6.
2. Drago F, Silveti MS, Di Pino A, Grutter G, Bevilacqua M, Leibovich S. Exclusion of fluoroscopy during ablation treatment of right accessory pathway in children. *J Cardiovasc Electrophysiol* 2002; **13**:778–82.
3. Papagiannis J, Avramidis D, Alexopoulos C, Kirvassilis G. Radiofrequency ablation of accessory pathways in children and congenital heart disease patients: impact of a nonfluoroscopic navigation system. *Pacing Clin Electrophysiol* 2011; **34**:1288–396.
4. Brugada J, Blom N, Sarquella-Brugada G, Blomstrom-Lundqvist C, Deanfield J, Janousek J *et al.* Pharmacological and non-pharmacological therapy for arrhythmias in the pediatric population: EHRA and AEPC-Arrhythmia Working Group joint consensus statement. *Europace* 2013; **15**:1337–82.
5. Drago F, De Santis A, Grutter G, Silveti MS. Transvenous cryothermal catheter ablation of re-entry circuit located near the atrioventricular junction in pediatric patients: efficacy, safety, and midterm follow-up. *J Am Coll Cardiol* 2005; **45**:1096–103.
6. Drago F, Placidi S, Righi D, Di Mambro C, Russo MS, Silveti MS *et al.* Cryoablation of AVNRT in children

- and adolescents: early intervention leads to a better outcome. *J Cardiovasc Electrophysiol* 2014; **25**:398–403.
7. Cohen MI, Triedman JK, Cannon BC, Davis AM, Drago F, Janousek J *et al.* PACES/HRS expert consensus statement on the management of the asymptomatic young patient with a Wolff-Parkinson-White (WPW, ventricular preexcitation) electrocardiographic pattern. *Heart Rhythm* 2012; **9**:1006–24.

Juha-Matti Happonen^{1*}, Nico Blom², Alpay Celiker³, Fabrizio Drago⁴, Joachim Hebe⁵, Jan Janousek⁶, Laszlo Kornyei⁷, Thomas Kriebel⁸, John Papagiannis^{9,10}, Thomas Paul¹¹, Jean-Pierre Pfammatter¹², Eric Rosenthal¹³ and Volkan Tuzcu¹⁴

¹Pediatric Cardiology, Helsinki University Children's Hospital, POB 281, Helsinki 00029, Finland;

²Leiden University Medical Center, Leiden, The Netherlands;

³Department of Pediatric Cardiology, Koc University, Istanbul, Turkey;

⁴Ospedale Pediatrico Bambino Gesù, Palidoro-Fiumicino (Rome), Italy;

⁵Center for Electrophysiology, Heart Center, Bremen, Germany;

⁶Children's Heart Center, University Hospital Motol, Prague, Czech Republic;

⁷Hungarian Pediatric Heart Center, Hungarian Institute of Cardiology, Budapest, Hungary;

⁸Pediatric Cardiology, Westfal-Klinikum, Kaiserslautern, Germany;

⁹Children's Mercy Hospital, Kansas, MO, USA;

¹⁰Mitera Children's Hospital, Athens, Greece;

¹¹Children's Heart Center, Göttingen, Germany;

¹²University Children's Hospital, Berne, Switzerland;

¹³Evelina London Children's Hospital, St Thomas' Hospital, London, UK;

¹⁴Pediatric and Genetic Arrhythmia Center Istanbul, Medipol University Hospital, Istanbul, Turkey

*Corresponding author. Tel: +358 50 427 2276; Fax: +358 9 471 75306, E-mail: juha-matti.happonen@hus.fi

doi:10.1093/europace/euv093

Published online 20 May 2015

Management of paediatric arrhythmias in Europe: authors' reply

We appreciate the letter by Juha-Matti Happonen *et al.*¹ addressing our recently published EP wire on, 'How are arrhythmias managed in the paediatric population in Europe? Results of the European Heart Rhythm Survey'.²