

Outcome of Myotonic Dystrophy 1 Depends on Comprehensive Diagnostic and Therapeutic Management

TO THE EDITOR:

COMMENTARY

With interest we read the article by Ciudin *et al* about a 49-year-old female with genetically confirmed myotonic dystrophy type (MD1). It was concluded that prophylactic pacemaker implantation should be generally considered in MD1 patients (1). We have the following comments and concerns.

We do not agree with the conclusion that MD1 patient should receive prophylactic implantation of a paemkaer (1). MD1 patients may not only experience supra-ventricular but also ventricular arrhythmias (2). To detect arrhythmias in general in MD1 patients it is advisable to see these patients either at regular, close follow-up investigations and to perform long-term ECG recordings. Long-term ECG recordings can be most adequately carried out by implantation of a reveal recorder. Additionally, MD1 patients require recurrent echocardiographic investigations to see if they develop systolic or diastolic dysfunction or left ventricular hypertrabeculation, also known as non-compaction (LVHT) (3). Detection of LVHT is crucial as this myocardial abnormality may carry an additional risk to develop ventricular arrhythmias or sudden cardiac death (SCD) (4). As soon as long-term ECG recordings indicate the presence of paroxysmal or permanent ventricular arrhythmias, implantation of an implantable cardioverter defibrillator (ICD) is indicated. Disadvantage of a pacemaker is that it is beneficial only in case of bradyarrhythmias or AV-block. Pacemakers are ineffective in case of ventricular tachy-

cardia, Torsades des pointes, or ventricular fibrillation.

A further shortcoming is that the length of the CTG repeat expansion was not provided. Knowing the length of the expansion is crucial as it may strongly correlate with the degree of organ involvement and the degree of complications and thus the outcome of MD1 patients. In this respect, it would be desirable to know the CTG-repeat length in the parents and siblings of the index case. Was the disease inherited from the mother's or father's side, or did it occur sporadically? Knowing the way of transmission is crucial as regression or expansion of the CTG-repeat expansion in successive generations has been reported (5).

Missing in the report is the current cardiac and non-cardiac medication the index patient received in addition to pacemaker implantation, if the applied medication was beneficial, and if the applied measures were well tolerated. To understand the therapeutic measures taken it would be helpful to know which organs or tissues were truly affected in addition to the myocardium. Patients with a multisystem disease like MD1 cannot be assessed only from a single perspective but require a multifocal, multiprofessional, and multidisciplinary approach. In this respect we should be also informed about possible cerebral, ocular, otologic, endocrine, gastrointestinal or renal involvement. Provided should be also serum creatine-kinase, troponin, and proBNP values since they may correlate with cardiac complications in these patients.

Overall, this interesting report could be more meaningful if more clinical and genetic data of the index case, her parents and siblings would have

been provided, if the index patient would have undergone regular clinical, ECG and echocardiographic follow-up investigations, and if information about treatment other than pacemaker implantation would have been provided. Knowing these complementary data would allow a more

Josef FINSTERER
Krankenanstalt Rudolfstiftung, Messerli Institute,
Veterinary University of Vienna, Vienna, Austria

precise assessment of the outcome of the index case. □

Keywords: myotonic dystrophy, cardiac involvement, cardiomyopathy, ventricular arrhythmias, myopathy, sudden cardiac death

Address for correspondence:
Josef Finsterer, MD, PhD
Postfach 20, 1180 Vienna, Austria
Tel. +43-1-71165-72085, Fax. +43-1-4781711
Email: fifigs1@yahoo.de

Article received on the 4th of December 2019 and accepted on the 26th of May 2020

Conflicts of interest: none declared.
Financial support: none declared.

REFERENCES

1. Ciudin RN, Dragatoiu NC, Sipos S, et al. Fast Progressing His-Purkinje Conduction Disturbances in a Myotonic Dystrophy Patient. *Maedica J Clin Med* (Buchar) 2018;13:152-154.
2. Bienias P, Łusakowska A, Czurzyński M, et al. Supraventricular and Ventricular Arrhythmias Are Related to the Type of Myotonic Dystrophy but Not to Disease Duration or Neurological Status. *Pacing Clin Electrophysiol* 2016;39:959-968.
3. Finsterer J, Stöllberger C, Kopsa W. Noncompaction in myotonic dystrophy type 1 on cardiac MRI. *Cardiology* 2005;103:167-168.
4. Finsterer J, Stöllberger C, Maeztu C. Sudden cardiac death in neuromuscular disorders. *Int J Cardiol* 2016;203:508-515.
5. Park JS, Kim N, Park D. Diastolic heart dysfunction is correlated with CTG repeat length in myotonic dystrophy type 1. *Neurol Sci* 2018;39:1935-1943.

AUTHORS' REPLY:

COMMENTARY

We would like to thank Dr. J. Finsterer, at Messerli Institute, Vienna, Austria, for his interest in our paper entitled "Fast progressing His-Purkinje Conduction Disturbances in a Myotonic Dystrophy Patient" (authored by RN Ciudin, NC Dragatoiu, S Sipos, DN Tesloianu, AM Ursaru, R Brezeanu, IM Coman and published in *Maedica J Clin Med* 2018;2:152-154) and taking the time to express his views regarding the addressed topic as well as for his valuable comments, all the more so as we do know his experience and papers he wrote on the topic.

The main issue in Dr. Finsterer's letter to the editor is related to primary prevention of sudden cardiac death in patients with myotonic dystrophy 1 (MD1): "We do not agree with the conclusion that MD1 patient should receive prophylactic implantation of a pacemaker (...) may not only experience supraventricular but also ventricular arrhythmias".

We fully agree that the issue of indicating an implantable cardiac defibrillator (ICD) in MD 1 patients is not completely resolved yet. However, we do have few guidelines, papers and observations to use and select the best treatment for these patients.

In chapter 12.2.2 (Neuromuscular disorders) of the 2015 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death (1), the box entitled "Arrhythmic risk in patients with neuromuscular disorders" includes a Class I recommendation, level of evidence B for implanting a pacemaker: "Permanent pacemaker implantation is recommended in patients with neuromuscular diseases and third-degree or advanced second-degree AV block at any anatomical level", as is our patient case. However, ICD implant is regarded as Class IIb, level of evidence B – "The use of an ICD may be considered in myotonic dystrophy type 1 (Steinert disease) ... when there is an indication of ventricular arrhythmias." – as a far more weak in-

dication than implanting a pacemaker and only in patients with documented ventricular arrhythmias, while our patient did not have any such ventricular arrhythmias and her left ventricle ejection fraction was normal.

Also, I would like to bring another reason provided by our colleague Dr. Finsterer et al in their own paper entitled “Sudden cardiac death in neuromuscular disorders” and published in *International Journal of Cardiology* (2), where they wrote that “in case a propensity for ventricular arrhythmias is documented, implantation of an ICD should be considered” related to MD1 patients. Propensity was correlated to the presence of risk factors for ventricular arrhythmias such as family history for sudden cardiac death, QT prolongation, increased QT-variability, early repolarization, T-wave alternans, ventricular tachycardia, myocardial fibrosis and non-compaction in addition to conduction disturbances, but our patient did not have such a documented parameters to answer Dr. Finsterer’s other questions regarding the patient history. Our patient did not have heart fail-

ure, so proBNP was normal and no other organ involvement was noticed.

In another paper published in the above mentioned journal, a meta-analysis of 18 studies with a total 1828 MD1 patients analyzing cardiac manifestations of myotonic dystrophy type 1 explored over the period 1980–2010, Petri et al (3) found only 4.1% non-sustained ventricular tachycardia, left-ventricular dysfunction in 7.2% of patients, and a prevalence of pacemaker implant and ICD implant of 4.1% and 1.1%, respectively. The issue of primary prevention in MD1 patients with normal left ventricular ejection fraction and no documented ventricular arrhythmia was not mentioned.

To conclude, primary prevention of sudden death in patients with MD1 could be an issue in selected cases having a high risk of ventricular arrhythmias, but it is not the usual indication in those to the one we presented in the above article.

Also, we did not take into account potential short- and long-term complications of ICD implants, including inappropriate shocks. □

Radu Nicolae CIUDIN
4th Clinic of Cardiology, “C. C. Iliescu” Institute of Cardiovascular Diseases, Bucharest, Romania
“Carol Davila” University of Medicine and Pharmacy, Bucharest, Romania

Nic Claudiu DRAGATOIU
4th Clinic of Cardiology, “C. C. Iliescu” Institute of Cardiovascular Diseases, Bucharest, Romania

Sergiu SIPOS
4th Clinic of Cardiology, “C. C. Iliescu” Institute of Cardiovascular Diseases, Bucharest, Romania

Dan Nicolae TESLOIANU
Cardiology Department, “Sf. Spiridon” University Emergency Hospital, Iasi, Romania

Andreea Maria URSARU
Cardiology Department, “Sf. Spiridon” University Emergency Hospital, Iasi, Romania

Ioan Mircea COMAN
“Carol Davila” University of Medicine and Pharmacy, Bucharest, Romania
2nd Clinic of Cardiology, “C. C. Iliescu” Institute of Cardiovascular Diseases, Bucharest, Romania

Address for correspondence: Radu Ciudin, MD, PhD
Email: radu_ciudin@yahoo.com

Article received on the 8th of May 2020 and accepted on the of 26th of May 2020

Conflicts of interest: none declared.
Financial support: none declared.

REFERENCES

1. **Sivia Priori, Carina Blomstrom-Lundqvist, Andreea Mazzatti, et al.** 2015 ESC Guideline for the management of patients with ventricular arrhythmias and prevention of sudden cardiac death: The Task Force for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death of the European Society of Cardiology (ESC) endorsed by Association for European Paediatric and Congenital Cardiology (AEPC). *EJH* 2015;41:2793-2867.
2. **Josef Finsterer, Claudia Stollberger, Concha Maezu.** Sudden cardiac death in neuromuscular disorders. *Int J Cardiol*, 28 October, 2015.
3. **Helle Petri, John Vissing, Nana Witting, Henning Bundgaard, Lars Kober.** Cardiac manifestations of myotonic dystrophy type 1. *Int J Cardiol*, September 14, 2011.