Supraventricular tachycardias in the first year of life: what is the best pharmacological treatment? 24 years of experience in a single centre

Guglielmo Capponi^{1,3}, Gilda Belli¹, Mattia Giovannini¹, Giulia Remaschi², Alice Brambilla³, Francesca Vannuccini³, Silvia Favilli³, Giulio Porcedda³ and Luciano De Simone³

¹ Department of Health Sciences, Post-Graduate School of Paediatrics, Anna Meyer Children's University Hospital, Florence, Italy ² Neonatology Department and Neonatal Intensive Care Unit, Careggi University Hospital, Florence, Italy ³ Cardiology Unit, Anna Meyer Children's University Hospital, Viale Gaetano Pieraccini 24, 50139 Florence, Italy.

BACKGROUND

Supraventricular tachycardias (SVTs) are common in the first year of life and may be life-threatening. Acute cardioversion is usually effective, with both pharmacological and non-pharmacological procedures. However, as yet no international consensus exists concerning the best drug required for a stable conversion to sinus rhythm (maintenance treatment). Our study intends to describe the experience of a single centre with maintenance drug treatment of both re-entry and automatic SVTs in the first year of life.

METHODS

From March 1995 to April 2019, 55 patients aged < 1 year with SVT were observed in Meyer Children's University Hospital in Florence. The SVTs were divided into two groups: 45 re-entry and 10 automatic tachycardias. As regards maintenance therapy, in re-entry tachycardias, we chose to start with oral flecainide and in case of relapses switched to combined treatment with beta-blockers or digoxin. In automatic tachycardias we first administered a beta-blocker, later combined with flecainide or amiodarone when ineffective

RESULTS

The patients' median follow-up time was 35 months. We obtained different responses in re-entry and automatic tachycardias. In re-entry tachycardias, flecainide was effective as monotherapy in 23/45 patients (51.1%), while in 20/45 (44.4%), a stable cardioversion was achieved after adding digoxin in 7/20 patients (35.0%), sotalol in 3/20 (15.0%), nadolol in 8/20 (40.0%), and propranolol in 2/20 (10.0%). For 2/45 patients (4.4%), flecainide was ineffective: in both cases the amiodarone plus nadolol combination was effective. As regards automatic tachycardias, the beta-blockers nadolol, propranolol and sotalol in monotherapy were effective in 3/10 patients (30.0%). The others, (7/10) (70.0%), required the combination of beta-blockers with another drug: flecainide in 6/7 (85.7%) cases, and amiodarone in 1/7 (14.2%). In the majority of patients, flecainide was effective with two or three administrations per day, in 2/52 cases (3.8%), however, the number of doses had to be increased: one patient was given six doses of flecainide and four of nadolol a day and the other patient was stabilized with six doses of flecainide and three of sotalol a day.

FIGURES



Figure 1. Flow chart of responses

Figure 2. Protocol proposal for the treatment of supraventricular tachycardias in the first year of life

CONCLUSIONS

In this retrospective study on pharmacological treatment of SVTs under 1 year of age the combination of flecainide and beta-blockers was highly effective in long-term maintenance of sinus rhythm in both re-entry and automatic tachycardias.