

Use, effectiveness and safety of Ivabradine in paediatric patients with atrial tachycardia

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Introduction: Ivabradine is a specific, selective inhibitor of the I(f) channels of the sinus node and the atrioventricular node. Ivabradine decreases heart rate and myocardial oxygen consumption.

Information about the use in children for the treatment of atrial tachycardia (AT) is limited.

Purpose: To analyze the antiarrhythmic effect of Ivabradine for the treatment of AT in children.

Materials and Methods: We enrolled 20 consecutive patients with atrial tachyarrhythmias (10 girls and 10 boys), who treated with Ivabradine. Patients underwent a complete history, physical examination, laboratory studies (including thyroid function, CK, CK-MB, LDG, Troponin I, proBNP), echocardiography, ECG, Treadmill test and Holter monitoring (HM). Cardiac MRI were performed according to indications and physician's decision.

7 (35%) had frequently recurrent AT, 9 (45%) – chronic AT, 2 (10%) - accelerated atrial rhythm, 1 (5%) – frequent premature atrial contractions (burden 45%). The etiology of AT was idiopathic in 50% (10/20), post-myocarditis in 30% (6/20), after surgical treatment of congenital heart disease in 2 (10%), increased automatism of the atrial foci in 2 (10%). Arrhythmia-induced cardiomyopathy was in 35% (7/20) cases.

Results: Long-term follow up of patients was $20,38 \pm 19,14$ months (range 1 to 60). The mean age of diagnosis of AT was $8,04 \pm 4,82$ year (0,16-16). The Ivabradine dosage after up-titration was $0,15 \pm 0,06$ (0,08-0,28 mg/kg/day) twice a day.

All patients received antiarrhythmic therapy prior to treatment with Ivabradine. We use of β -blockers, class IC and III antiarrhythmic agents and combination therapy. Ivabradine was effective in 70% (14/20) patients: in 6 - the tachycardia was suppressed, in 8 reduced the heart rate and decrease duration of paroxysm of tachycardia (control the ventricular response).

Ivabradine was ineffective in 30% (6/20) patients, in 4 patients with post-myocarditis AT and in 2 patients after surgical treatment of congenital heart disease. Radiofrequency ablation was performed in 6 patients (3 of 6 children taking Ivabradine before catheter ablation, 3 of 6 after non-successful RFA).

There were no significant side effects from the use of Ivabradine.

Conclusions: Ivabradine is an effective and safe drug for the treatment of idiopathic atrial tachycardias in paediatric patients.