

PocketECG - a new noninvasive, continuous and real-time ambulatory ECG monitoring in children with non-diagnosed tachycardia episodes – the first experiences.

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Introduction: Episodes of tachycardia are common in children and adolescents, but usually it is a big problem with their documentation, especially when the incidents are short lasting. PocketECG system is a new technological solution enabling long term, noninvasive, real-time ECG monitoring with automatic diagnosis of arrhythmias, in which an ECG signal is transmitted over a mobile network. Methods: We multicenter studied 262 children with non-diagnosed episodes of tachycardia at age from 4.2 to 18.5 years (mean 14.4 ± 3.2 years). In group I – 125 pts the standard 24-hour ECG recording was performed at the beginning of the study and the second one was done one month later. In group II – 137 pts one month lasting ECG monitoring was performed with the PocketECG system. Results: In all 262 examined children we acquired Holter ECG and telemetric PocketECG recordings of good quality and final reports were prepared. In group I two standard 24-hour Holter monitoring was diagnostic only for 4.8% of the patients, the first examination for 3.2% (4 pts) of the group and, the second one for other 1.6% (2 pts), in 4 pts it was sinus tachycardia (ST), in 2 pts supraventricular tachycardia (SVT) was registered. In group II the new noninvasive, long term real-time ECG telemetric monitoring was effective for 26.3% of them, 10 children informed about the tachycardia and at that time SVT was diagnosed in 9 and ventricular tachycardia (VT) in 1, 19 pts felt tachycardia but it was ST only, in 6 children short episodes of SVT and in 1 VT was registered but they did not feel the incidents.

Conclusions: PocketECG system, as high-quality long term ECG recording with automatic analysis for continuous, noninvasive, real-time ECG monitoring is a reliable method for assessment of heart rhythm and arrhythmic events in children and adolescents and its use should be promoted.

In children and adolescents with non-diagnosed episodes of tachycardia 24-hour ECG monitoring is effective in about 5% of pts, prolongation of ECG monitoring helps to diagnose this disorders. In most of the patients who have felt tachycardia episodes during ECG monitoring sinus tachycardia was diagnosed.