

PW2-2

Pediatric Usage of a Newly Available Handheld (Einthoven Lead I) Web Based Event Recorder [ER] (Zenikor EKG-2 TM): First Results

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Introduction: ER recordings in children are difficult due to direct positioning of the device on the chest, limited storage capacity and difficult technical handling. Recently a hand held, thumbs activated ER has become available using GSM network messaging after automatic recording and a web based analysis tool.

Purpose of the study: To investigate Zenikor EKG-2 ER [ZER] in pediatric patients [pts].

Methods: ZER ECGs in pts with and without tachycardia, palpitations, pacemakers and ICDs were performed and compared with 12 lead ECGs.

Results: 100 ECGs in 98 pts were recorded (male: n=49; structural heart disease: 54%) in pts with sinus rhythm [NSR] (age 0-11 month [INF], n = 20; age 1-4 yrs. [TODDL], n=20; age 5-17 yrs. [CHILD], n=20), paced rhythm [PACE] (n=20) and in tachycardia [TACHY] (n=20). Successful ZER recording and data transmission was possible in all cases and considered easy or very easy in 92.6%. In 96% QRS complexes were visible and heart rate could be calculated. R was 0.975 (p<0.001) for matching of ventricular cycle length. P wave detection was possible in 82.1%. 24% of the pts had arrhythmia, which could be detected by ZER in 95.8 %. For NSR P-wave detection rate was significant lower in CHILD as compared to TODDL, but not to INF. For heart rate detection there was no difference between these subgroups. For PACE, detection of pacing mode was possible in 70 % for AAI/AVI and in 99.3 % for VVI, VAT or DDD pacing. For TACHY, SVT (n=13) as well as sinus- or atrial tachycardia (n=6) could be detected in all cases.

Conclusion: 1. ZER recording is technically easy for children of all age groups. 2. Data transmission is perfect and web analysis can be almost always obtained just minutes after the ECG recording has been taken. 3. Heart rate detection is possible in >95% for NSR in all children, as for paced rhythms and tachycardia. 4. Ventricular pacing can be identified nearly always. 5. Tachycardia detection is excellent and even classification of tachycardia is possible. 5. P wave and atrial pacing detection remains challenging, esp. in the older age group.