DIAGNOSING OF HEART CONDUCTION DISORDERS BY A COMPARATIVE METHOD FOR BAND PATTERS IN CHILDREN WITH CHRONIC KIDNEY DISEASE ON CONSERVATIVE TREATMENT- PILOT STUDY

[1]Krystyna Laszki-Szczachor, [1]Malgorzata Sobieszczanska, [2]Danuta Zwolinska, [1]Henryk Filipowski, [1]Leslaw Rusiecki, [2]Makulska Irena, [2]Dorota Polak-Jonkisz

[1]Dpt. of Pathophysiology, [2]Dpt. of Pediatric Nephrology; Wroclaw Medical University, Wroclaw, Poland

Introduction:

Cardiovascular complications are an inherent component of chronic kidney disease (CKD) natural history, and their early recognition is an essential challenge for contemporary medicine. A non-invasive, multi-lead system for Body Surface Potential Mapping (BSPM) provides a precise analysis of the heart conduction system, owing to a variety of electrocardiographic signals, collected from the thorax surface, which can be useful in detecting an initial phase of CKD-related cardiac impairments.

Aim of study:

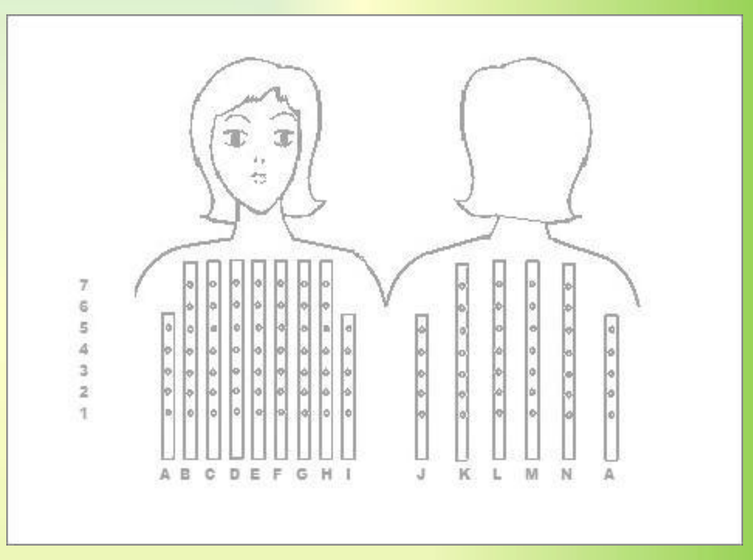
The goal of the study was a preliminary evaluation, whether a comparative method with band patterns created from the BSPM recordings, could be used for a quick evaluation of the heart intraventricular conduction system disorders, which are observed in CKD children treated conservatively.

Material and Methods:

A study group consisted of 22 children with CKD (mean age: 13.1 ±2.5 yrs); a control group - 29 children (mean age: 12.7 ±3.1 yrs). Based on electrocardiographic records, obtained with an 87-lead FUKUDA DENSHI HPM-7100 mapping system, multicolour maps of the ventricle activation time (VAT) were plotted in all the children of either group (strips of different colours denote the various VAT values)
In our earlier study programmes, band patterns were designed for particular conduction disorders, identified both in CKD children and in healthy subjects. In this reported study, we compared newly examined children, both healthy (controls) and CKD children (study group), with the previously designed patterns. The obtained results of that comparison specified the type of heart conduction disorder.

Results:

Based on the BSPM recordings, computer-generated banding maps from the examined children (conservatively treated CKD and healthy controls) were obtained. A comparison of the plotted maps with the previous patterns did not reveal any statistically significant differences. Band configurations in the examined children with CKD indicated delays at the region of the upper fascicle of the left His bundle branch, with specified time and location.



Ryc.1. Scheme of electrodes placement on the human thorax surface.

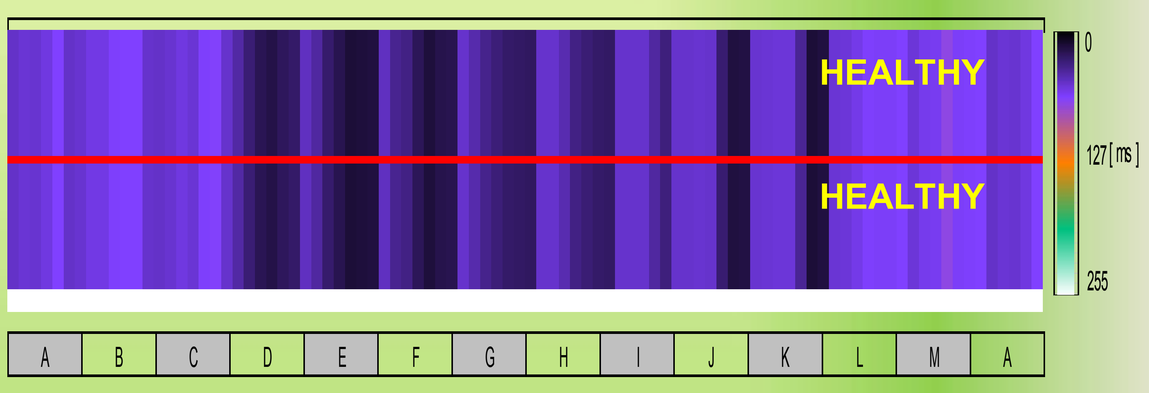


Fig.2. Graphic comparison of VAT patterns: the control template (upper band) – the normal subject's result (lower band)

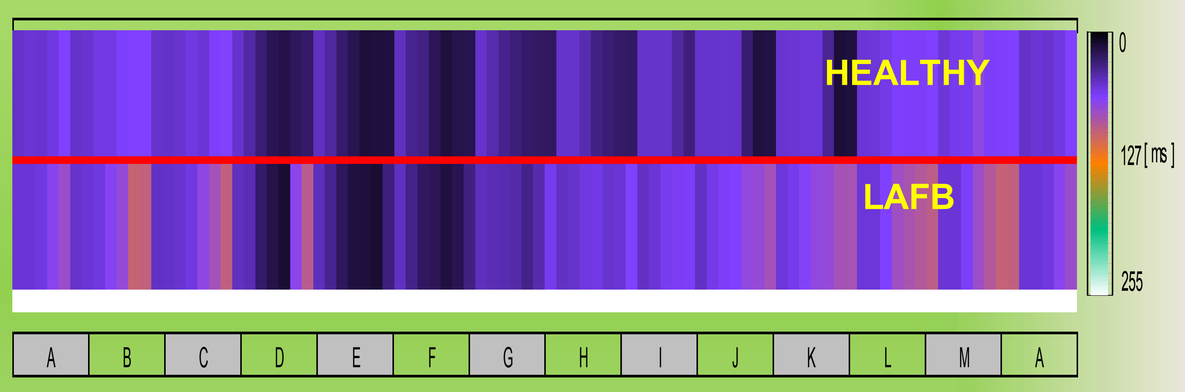


Fig.3. Graphic comparison of VAT patterns: the control template (upper band) – partial LAFB (lower band).

Red line separate the bands between the compared patterns. Letters A – M designate the electrode row distributed on the body surface of the examined person in the BSPM FUKUDA DENSHI system.

Conclusions:

These preliminary studies have demonstrated that a comparison of established temporal band patterns with new BSPM records may provide a very quick and non-invasive evaluation method, assessing heart conduction disorders in CKD children.

52 ERA
877-SP
J2) Chronic Kidney Disease. Pathophysiology, progression & risk factors.
Laszki-Szczachor Krystyna
DOI: 10.3252/pso.eu.52era.2015
ePosters supported by F. Hoffmann-La Roche Ltd.
52nd ERA-EDTA CONGRESS London 2015 United Kingdom MAY 28th-31st
PosterSessionOnline.com