

FOOTPRINTS CHARACTERISATION IN PATIENTS WITH DRAVET SYNDROME

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INTRODUCTION

Dravet Syndrome (DS) is a rare epileptic encephalopathy. Baropodometry might be a useful tool to objectify abnormalities of walking on scarcely collaborative subjects [1].

PURPOSE: to characterize foot pressure maps in Dravet Syndrome.

METHODS

Nine DS (14.7±6.0years; BMI: 19.5±3kg/m²; foot-size: 23.4±2.4cm) and seven controls (CS; 15.1±10.5years; BMI: 16.9±5.6kg/m²; foot-size: 22.3±3.7cm) walked self-paced. Five right and left footprints were recorded with a pressure matrix (emed-X400, Novel – DE). Contact area (CA, cm²), averaged force (AF, %BW), contact time (CT, %stance and ms), maximum averaged pressure (AP, kPa), pressure peak (PP, kPa), and maximum force (MF, %BW) were calculated for forefoot (M1), midfoot (M2), rear-foot (M3), lateral-foot (M4), medial-foot (M5) areas, and Foot. Coefficient of variation (CV) was calculated [2]. Differences were tested with Mann-Whitney test (p=0.05).

RESULTS

The maximum force (MF) appeared bilaterally reduced at the rear-foot (p=0.01). Contact time increased bilaterally for all the regions of interest, except for M3 of LF (p=0.01). Significant increments of the CV for CT of the LF in M3, M4, and Foot emerged (p<0.04), coupled with increased variability of averaged force at forefoot (p=0.01) and rear-foot (p<0.01). Increased variability of the maximum averaged pressure (CV-AP) of LF was detected (p=0.04) for whole Foot, as well as for left rear, medial and lateral foot (p=0.02, 0.04 and 0.03 respectively).

DISCUSSION

A reduced force exchanged with the ground at the rear-foot emerged. This is in line with results obtained with conventional gait analysis, identifying defective power generation at knee and ankle (Hospital University Clinic Gait Lab, see poster). A marked lateralization of balance function emerged, with dominant RF providing more stable support than LF. Overall increased variability in pressure and averaged forces confirms ataxia. Baropodometry can be considered a valid alternative to identify major gait pattern abnormalities in people with behavioural or cognitive disturbances.