DISTAL MOTOR FUNCTION ASSESSMENTS OF CHILDREN WITH SPINAL MUSCULAR ATROPHY: THE USE OF A TABLET AS A PART OF THE PROPOSED KINECT-MFM STUDY

Dominique Vincent-Genod[1], Justine Coton[2], Pascal Rippert[3], Guillaume Thomann[2], **Carole Vuillerot**[1]

[1]Service de Rééducation pédiatrique, Hospices Civils de Lyon, Université Lyon 1 – Lyon, France
[2]Univ. Grenoble Alpes, CNRS, G-SCOP – Grenoble, France
[3]Pôle Information Médicale Evaluation Recherche, Hospices Civils de Lyon – Lyon, France

Introduction: Given the progress of research and management in the neuromuscular diseases, particularly in Spinal Muscular Atrophy (SMA), validated tools are needed to assess patients' motor function. These tools are fundamental in order to improve the understanding of the natural history and to quantify the impact of new therapeutics in these populations. The Motor Function Measure (MFM) is a validated scale for the measurement of functional motor capacities usable in all neuromuscular diseases.
Purpose: Clinicians from a neuromuscular diseases reference center (Hospices Civils de Lyon, France) and G-SCOP research team (INP Grenoble, France) were developing the instrumented Kinect-MFM, an automated system to assess SMA patients' motor function using new and low cost technology.
By using, these technologies, our objectives were to improve the quality and reproducibility of the MFM by suppressing subjectivity linked to heteroevaluation.
Method: The first step of this work was to assess the relevance of the tablet to capture and measure distal motor functions during a MFM test. The second was to compare the scoring of MFM items provided by a therapist with the scoring provided by the system.
Results: Three applications were developed on this system to allow the comparison. They show difficulties to reproduce exactly the same conditions than in the current MFM. The size, the sensitivity, the multipoint control and the accuracy of the tablet constitute some challenge we have to take up.
Conclusions: the proposed tablet was initially user to control the complete system by the therapist. The complexity of measuring distal functions by the Kinect led us to use this technology to complete the MFM instrumented protocol researchers proposed.