EVALUATION OF MOTOR DYSFUNCTION IN SPINOCEBERELLAR DEGENERATION BY ANALYSIS OF SPIRAL DRAWING AND TAPPING TEST

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Objectives: Several reports stated the methods of human movement in neurologic diseases. There have not been clearly established objectively quantitative systems to analyze ataxia in patient with spinocerebellar degeneration (SCD). In this study we quantificationally evaluated the motor performance in SCD by analysis of spiral drawings and tapping tests.

Methods: Twenty seven patients with SCD, 8 each with MSA-C, 7 patients with sporadic CCA and 12 patients with hereditary ataxia (HA) were enrolled in this study. Severity of ataxia was assessed with the Scale for the Assessment and Rating of Ataxia (SARA) in all the patients. The motor performance was analyzed in two ways. Each patient was asked to trace on provided Archimedean spiral with a pen and then was asked to tap the pen on ten targets. By using the software we developed, the total gap area (GA) between the original spinal and hand-draw spinal and the sum of distances (DS) between targets and tapped points were calculated.

Results: GA was correlated with the SARA score in all SCD patients. DS was correlated with the SARA score in only MSA-C and HS patients.

Conclusion: These results showed that GA may be a valid method of numerical evaluation of motor dysfunction in patients with SCD.