

Motor and non-motor subtypes of cervical dystonia

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Introduction: Cervical dystonia (CD) is a heterogeneous condition [1]. However, while motor subtypes of CD have recently been identified, it is still unknown whether and how non-motor symptoms contribute to CD heterogeneity [2-4]. In the present cross-sectional study, we aimed to identify clinical CD subtypes on the basis of motor and non-motor symptoms by using a hypothesis-free data-driven approach.

Methods: Fifty-seven patients with CD participated in the study. Patients underwent a clinical evaluation that assessed motor and non-motor features of CD with standardized clinical scales. We investigated five clinical domains, including motor symptoms, psychiatric disturbances, sleep disorders, cognitive impairment and pain. These domains were used as variables in a k-means cluster analysis with two-, three-, and four-cluster solutions.

Results: The two-cluster solution best fits our sample. Cluster I (n=32) included patients who were younger and had less severe non-motor symptoms and a lower disability level than patients included in Cluster II (n=25). The two clusters showed similar sex distribution and disease duration. Similarly, the type of motor pattern and the occurrence of tremor and sensory trick were equally distributed in the two subtypes.

Conclusions: We identified two clinical subtypes of CD. The two subtypes shared similar motor features but were characterized by different non-motor symptom severity. These findings suggest that motor network dysfunction is a common pathophysiological feature of CD, whereas the extent of non-motor network involvement may differ in CD, with age acting as a possible modulating factor.

References

- [1] HA Jinnah, V Neychev, EJ Hess, The Anatomical Basis for Dystonia: The Motor Network Model, Tremor Other Hyperkinet. Mov. (N Y). 7 (2017) 506
- [2] WH Jost, L Tatu, S Pandey et al. Frequency of different subtypes of cervical dystonia: a prospective multicenter study according to Col-Cap concept, J. Neural. Transm. (Vienna). 127 (2020) 45-50.
- [3] F Di Biasio, R Marchese, G Abbruzzese et al. Motor and Sensory Features of Cervical Dystonia Subtypes: Data From the Italian Dystonia Registry, Front. Neurol. 11 (2020) 906.
- [4] SA Norris, HA Jinnah, AJ Espay et al. Clinical and demographic characteristics related to onset site and spread of cervical dystonia: Onset Site and Spread Of Cervical Dystonia, Mov. Disord. 31 (2016) 1874-1882.