Mental rotation of body parts and sensory temporal discrimination in fixed dystonia

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Fixed dystonia is an uncommon but severely disabling condition typically affecting young women following a minor peripheral injury. There is no evidence of any structural lesions of the central nervous system nor any clear peripheral nerve or root damage. Electrophysiological techniques such as short intracortical inhibition, cortical silent period and a plasticity inducing protocol have revealed similarities but also differences compared to classical mobile dystonia. To further explore the pathophysiology of fixed dystonia we compared mental rotation of body parts and sensory temporal discrimination in 11 patients with fixed dystonia, 11 patients with classical mobile dystonia and 10 healthy controls. In the mental rotation task subjects were presented with realistic photos of left or right hands, feet and the head of a young women with a black patch covering the left or the right eye in six different orientations. Subjects had to verbally report the laterality of the presented stimuli. To assess sensory temporal discrimination subjects were asked to discriminate whether pairs of visual, tactile (electrical), or visuo-tactile stimuli were simultaneous or sequential (temporal discrimination threshold) and in the latter case which stimulus preceded the other (temporal order judgement). In accordance with previous studies patients with mobile dystonia were abnormal in mental rotation and temporal discrimination, whereas patients with fixed dystonia were only impaired in mental rotation. Possible explanations for this deficit may include the influence of the abnormal body posture itself, a shared predisposing pathophysiology for mobile and fixed dystonia, or a body image disturbance. These findings add information to the developing pathophysiological picture of fixed dystonia.

type: journal paper/review (English)
date of publishing: 15-6-2010
journal title: Mov Disord (25/8)
ISSN electronic: 1531-8257
pages: 1061-7