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Degree of muscle shortening in chronic hemiparesis in patients not treated with guided self-rehabilitation contracts (GSC)

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Objectives Antagonist muscle resistance, including due to muscle contracture, is a fundamental factor of motor impairment in spastic paresis. We aimed to quantify the degree of shortening in the main muscles involved in chronic hemiparesis (~1 year post-lesion), in patients following a conventional system of rehabilitation.

Methods From their first clinic visit in the neurorehabilitation unit of the PM&R department we retrospectively collected the assessments of passive range of motion (XV1) – based on the 5-step clinical assessment, including the Tardieu Scale – against 8 key antagonists in the lower limb (n = 19 patients with chronic hemiparesis, age: 48 ± 13, mean ± SD; time since lesion 3.7 ± 3.8 years) and 13 antagonists in the upper limb (n = 13 patients, age: 39 ± 13, mean ± SD; time since lesion 5.2 ± 3.9 years), then derived coefficients of shortening (CSH) by referring them to the normal expected amplitude (X0) = (X0 – XV1)/X0.

Results The higher coefficients of shortening were: vertical adductors (latissimus dorsi – pectoralis major – teres major) 36 ± 3%; shoulder extensors with flexed elbow (long head of triceps; latissimus dorsi) 33 ± 4%; horizontal adductors (pectoralis major), 23 ± 1%; gastrocnemius, 20 ± 1%; soleus, 15 ± 2%; gluteus maximus, 16 ± 3%; rectus femoris, 12 ± 1% and pronator teres, 12 ± 4%.

Conclusion Shoulder extensors, plantar flexors and gluteus maximus in patients untreated with self-stretching postures have undergone major muscle shortening in chronic hemiparesis. A future study could assess the effectiveness of stretching postures taught and applied from the early phase of stroke on shortening of these muscles.

Keywords Muscle shortening; Chronic hemiparesis

Disclosure of interest The authors have not supplied their declaration of conflict of interest.

CO09-007-e
Comparative shortening of different muscles in patients with chronic hemiparesis treated in guided self-rehabilitation contracts

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Objectives Muscle contracture is one of the main factors of motor impairment in spastic paresis, and particularly in hemiparesis. We...