Effect of botulinum toxin injection on spatiotemporal parameters of gait in adults with cerebral palsy

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Keywords: CP; Gait; Biomechanics; Botulinum toxin

Objective.– The quantification of the degradation of gait quality and of the autonomy is a major part of the medical care for patients with a spastic diplegia due to cerebral palsy (CP). In children with CP, many studies have characterized gait pattern. From these works, many indexes have been proposed. Currently, the Gillette Gait Index (GGI) is the score preferred by clinicians to follow gait quality and of the GGI for 3 patients out of 16, an alteration for 4 patients and no changes for the 9 other patients (test proposed by Postans).

Discussion.– The results of this study showed that the BoNTA injection induced an improvement of several gait parameters, such as the gait velocity and the symmetry during the stance and the swing phase. However, post-BoNTA injection the evolution of the GGI was very heterogeneous. This result could be explained by the fact that the GGI is calculated thanks to several kinematics parameters which have not changed in the same direction and/or in the same proportion for each patient.

Simulated cerebral palsy gait patterns: The effects on joint and muscle activities

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Keywords: Simulated gait; Cerebral Palsy; Joint and muscle activities

Cerebral palsy (CP) is a neurological disorder producing motor impairments of the lower limbs. Comparing gait analysis data, representative of the motor disorganization, with data from the healthy population might change clinical interpretations of primary neurological consequences and secondary and compensatory effects resulting in muscle abnormalities and bone growth disorders. In a perspective to improve appropriate treatment in the management of CP, this study proposes to evaluate the direct consequences of mimicking pathological postures on the kinetics and EMG signals to give an explanation of the differences observed between the specific CP primary consequences and those caused by biomechanical constraints on joints.

Introduction.– Ataxic neuropathies are peripheral neuropathies characterized by impairment of deep sensation and moderate motor impairment. They lead to instability with impaired balance and gait. The specific functional rehabilitation is a major asset in the care of these patients.

Observation.– A 28-year-old patient presents an ataxic progressive neuropathy (since the age of 6 years). It is complicated by a Charcot foot which was treated surgically with amputation of the 1st, 2nd and 3rd left toe. This patient presented difficulties in his social and occupation life (impaired balance and gait, difficulty in climbing stairs...). A review: walking heels, bilateral flat valgus feet and disturbed of proprotoceptive and thermoralsic sensory perception. Assessment was based on the evaluation of balance (single leg stance, Berg Balance scale and get up and go test) and gait speed. A specific rehabilitation treatment was undertaken in an outpatient clinic for improving the stability and balance, postural correction, improving the pattern and speed of walking and physical conditioning. A molded orthotics was prescribed. Outcome was marked by an improvement in all parameters evaluated after two months of rehabilitation. The patient felt very satisfied.

Discussion.– Rehabilitation in ataxic neuropathy is based on sensorial reha-

bilitation, range of motion gain, muscle strengthening, static and dynamic rehabilitation and improving aerobic capacity. Devices are necessary particularly in cases of neurological arthropathy of the feet. These patients should be referred routinely to rehabilitation units for early care, which allow improvement of their social and occupational quality of life.

Further reading

Interest of balance training and physical conditioning in outpatient management of ataxic neuropathy: Case report and review of the literature

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Keywords: Ataxic neuropathy; Balance; Rehabilitation

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