$n = 09$ cases (40.9%), vascular hemiplegia, $n = 08$ cases (36.3%), spinal cord injury, $n = 02$ cases (9%); head injury, $n = 01$ case (5%); multiple sclerosis, $n = 01$ cases (5%) and sequelae of meningitis, $n = 01$ case (5%). The affected lower limb spasticity, $n = 17$ cases (77.2%); upper limb, $n = 09$ cases (49.9%). Stretching casts were placed 10 to 15 days after injection in 07 patients (31.8%).

Discussion/conclusion.– Intramuscular injections of botulinum toxin showed a gain of the modified Ashworth score of about 02 points on average after 02 to 04 weeks, a gain of joint mobility, improved terms orthopedic and functional. After 03 months the results were classified into three levels; good: $n = 09$ patients (40.9%), medium: $n = 07$ patients (31.8%) and poor: $n = 06$ (27.2%).

Further readings

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P022–EN

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 modifications and the effects of therapeutics. The purpose of this study was to evaluate the effect of botulinum toxin (BoNTA) injections on the spatiotemporal parameters of gait and on GGI of adult CP patients.

Method.– Sixteen patients (28 ± 7 years) participated in this study. A quantitative gait analysis at the preferred speed (Helen Hayes protocol, 100 Hz Motion Analysis ®) was performed before and 1 month after multi area injection of BoNTA. Data analysis was performed on the spatiotemporal parameters of the gait cycle, on the asymmetry of the gait cycle phase (Robinson index) and the GGI was calculated. A student t-test was performed ($P < 0.05$).

Results.– Post-BoNTA injection, the gait velocity and the step length of patients significantly increased (respectively, +10% and +6%) and the asymmetry index during the stance phase and the swing phase significantly decreased (respectively, −3.37 and −6.2). The mean GGI was of 294 [88–641] for the right side and of 956 [618–1572] for the left side. Post-BoNTA, we can note an improvement 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 asymmetry 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.

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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

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 proprioceptive and thermoalgesic sensorial 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 rehabilitation, 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

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P024–EN

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.

Ten healthy adults were asked to perform a normal walk test and to mimic gaits observed in cerebral palsy (CP) patients with spastic diplegia, jump and crouch gaits. The capture movement was performed using a Vicon system with 13 cameras and 2 force plates. Anatomical landmarks were placed according to the protocol of Hélène Hayes and 8 EMG electrodes were placed at principal muscles of the lower limbs. Spatiotemporal parameters, kinematics, kinetics and EMG were compared to normal gait and to CP gaits.

Results shows that simulated pathological gaits produced changes in gait parameters, kinetics and muscle activations, similar to those observed with CP patients. As results, the velocity, stride length the cadence and also the range of motion decreased significantly for all simulated gaits, as the complexity of the gait pattern increased. Abnormalities were found in electromyographic activity and joint moments. Compared with a normal EMG pattern, premature activities and prolonged activities were detected.