ORAL PRESENTATION 4-1

소아재활

발표일시 및 장소 : 10 월 19 일(토) 10:00-10:10 Room D(5F)

OP4-1-1

The effect of botulinum toxin injection on the gait analysis in children with crouch gait

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Objective

To investigate the effect of botulinum toxin type A (BTX-A) injection on the musculotendinous length and dynamics of hamstring muscles in children with spastic cerebral palsy (CP) with crouch gait.

Design

a prospective study

Setting

University hospital pediatric rehabilitation clinic

Participants

Twenty-nine children with spastic CP (Gross Motor Function Classification System I-III)

Interventions

BTX-A (Dysport®, abobotulinum toxin-A) injection into the semitendinosus and semimembranosus muscles under the guidance of ultrasonography.

Main Outcome Measures

Assessments included Gross Motor Function Measure (GMFM), Modified Ashworth Scale (MAS), Modified Tardieu Scale (MTS), 3-dimensional computerized gait analysis and calculated semimembranosus (SM) muscle-tendon length and lengthening velocity during gait using musculoskeletal modeling and inverse kinematic analysis at baseline and post-injection weeks 4 and 16.

Results

Significant improvements in GMFM, MAS, and MTS were recorded at week 4 & 16 compared to those at baseline. Kinematic data showed a decrease in knee flexion during the stance phase at week 4 and decreased hip internal rotation at initial contact. The length of SM muscle-tendon was unchanged after BTX-A injection, while mean lengthening velocity during the swing phase was increased at week 16 after injection compared to baseline data. The subgroup analysis showed the hip rotation angle had significant changes only in the group with hip internal rotation at initial contact.

Conclusions

The injection into hamstring muscles in the children with crouch gait led to significant improvement in gait kinematics without significant changes in muscle length in these children.