Long Term Effects of Night Splinting in Children with Cerebral Palsy

Clinical Bottom Line:
1. This study has shown that night splinting following botulinum toxin A (BTxA) injections, reduces spasticity and increases functionality in children with hemiplegic cerebral palsy.
2. There was a significant reduction in spasticity after six months of wearing a night splint following BTxA injections.


Level of Evidence: Level IIb evidence. This individual cohort study had strong statistical evidence, but a relatively small RCT, which hinders a higher level of evidence.

Clinical Question: In children with cerebral palsy, is the use of casting and/or orthotics more effective than surgery in increasing range of motion and functionality while decreasing complications?

The study: The purpose of this study was to determine if BTxA injections followed by night splinting can reduce spasticity and increase a baseline score from the Quality of Upper Extremity Spasticity Test (QUEST). Twenty children with hemiplegic cerebral palsy were randomly assigned to two groups; one that wore night splints and one that did not, following botulinum injections. The two groups were tested at baseline and then again at two months and six months.

The study patients: The patients were children with hemiplegic cerebral palsy (N=20), ages 2.5 to 12 years of age. They were all receiving BTxA injections at the Department of Pediatric Orthopedics of Athens School of Medicine. None of the patients had mental retardation and all were under the care of senior authors. The children were randomly assigned to two groups of 10 children; one that wore night splints, and one that did not. The children were instructed to receive occupational therapy three times a week. Both groups were tested after two months and six months after botulinum toxin A injections, using QUEST.

Experimental Group (Group A): The experimental group (n=10), Group A, wore night splints following the BTxA injections. The experimental group was the group I was targeting in my clinical question.

Control Group (Group B): The control group (n=10) received the BTxA injections but did not wear night splints.

The Evidence: The outcome was measured using a baseline score from QUEST. The patients were tested two months and six months post injections. The evidence had shown that both the experimental and control groups improved after two months. Group A (night splints) improved by 15.4%, while Group B (no night splints) improved by 12.2%. After six months, Group B had decreased to 4.3%, while Group A significantly improved by 15.9% (p=0.000).

Comments: This study determined that night splinting following BTxA injections helps to elongate the effects of those injections in decreasing spasticity in children with cerebral palsy. There is a strong external validity and important clinical implications from this study, especially for pediatric clinicians. Although this study has shown that splinting seems to enhance BTxA injections, more research needs to be done to assess the effects of splinting alone.

Appraised By: Andrea Blahovec Date appraised: 8/2/09