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Rehabilitative Interventions to Improve Biomechanical or Functional Outcomes for Children with Obstetric Brachial Plexus Palsy: A Systematic Review

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Presented in Partial Fulfillment of the Master of Science in Occupational Therapy degree at Thomas Jefferson University

Objectives of Presentation:
1. Describe the functional deficits associated with obstetric brachial plexus palsy (OBPP) and their impact on occupational performance
2. Apply, through discussion, the best available rehabilitative interventions for OBPP to clinical practice
3. Examine areas of need for future research of rehabilitative interventions for OBPP

PICO: What are the most effective rehabilitative interventions to improve biomechanical or functional outcomes for children with obstetric brachial plexus palsy?

Methods:
• Systematic search of PubMed, CINAHL, MEDLINE yielded 256 results
• Search terms (including variations): brachial plexus, erb, klumpke, obstetric palsy, rehab, therap, splint, orthos, orthot, electrical stimulation, botox, botulinum, manual therapy, range of motion, ROM, interv, occupation, strength, quality of life, functional outcome, motor
• Abstract screening based on inclusion/exclusion criteria initially yielded 78 eligible articles, authors agreed on 16 articles for qualitative review based on applicability to rehabilitative scope of practice
• Critique: Two reviewers per article independently utilized Law’s Appendix M and N (Law and McDermid, 2003) for quality scoring, compared scores, adjudicated specific item discrepancies and arrived at a consensus score for each article

Results:
• Themes:
  o Theme 1: Modified Constraint-Induced Movement Therapy (mCIMT)
    • Caregiver/Therapist Collaboration
    • Low level BPI
    • Intervention
    • Learned non-use/Neural Plasticity
  o Theme 2: Kinesiotape (KT)
    • Effective in early-life
    • Consider wear time (avg. 2-3 days on; 1-2 days off)
    • Parent education is pivotal
    • Positive functional/biomechanical outcomes
  o Theme 3: Orthoses & Casting
    • Use of shoulder supports/orthotics to improve functional position, but not to improve shoulder ROM
    • Serial casting/splinting has potential to improve elbow extension
    • Plaster casting with BoNT-A in conjunction with PT/OT can increase elbow extension and function
  o Theme 4: Caregiver Home Program Implementation
    • AROM increases steadily over a one-year period more than PROM (with or without weekly OT)
    • Caregivers use the DVD for about 3 months before relying on memory to administer program
    • Caregiver confidence may increase from IE to 3 months, yet accuracy may decrease, depending on the exercise
    • Attrition may indicate that functional outcomes experienced by more motivated participants
  o Theme 5: Conservative Therapy
    • SIGNIFICANT, intermediate quality evidence for EStim/adjunct tx
    • Correlational, low quality evidence for conservative tx alone

References


17. Rasmussen, L., Justice, D., Chang, K. W., Nelson, V. S., & Yang, L. J. Home exercise DVD promotes exercise accuracy by caregivers of children and adolescents with brachial plexus palsy. *Pm&r*, (0) doi:http://dx.doi.org/10.1016/j.pmrj.2013.06.003


