

Development of Occupational Therapy Pain Management For Patients with Obstetric Brachial Plexus Palsy

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BACKGROUND

- ✧ Obstetric brachial plexus palsy (OBPP) impacts 1.5 infants per 1000 live births (Chauhan, Blackwell, and Ananth, 2014)
- ✧ OBPP is classified using Narakas levels, based on the nerve roots involved in the injury (Al-Qattan et al., 2009)

GROUP I: Upper Palsy

- C5 & C6 are injured
- Weakness and paralysis at shoulder level impacting abduction, flexion, and external rotation
- Weakness at elbow level impacting elbow flexion

GROUP II: Extended Palsy

- C5, C6, & C7 are injured
- Weakness and paralysis at shoulder level impacting abduction, flexion, and external rotation
- Weakness at elbow level impacting elbow flexion
- Wrist drop

GROUP III: Total Palsy with no Horner Syndrome

- C5, C6, C7, C8 & T1 are injured
- Complete flaccid paralysis of the affected upper extremity

GROUP IV: Total Palsy with Horner Syndrome

- C5, C6, C7, C8 & T1 are injured
- Complete flaccid paralysis of the affected upper extremity
- Horner Syndrome:
 - Decreased pupil size
 - Drooping eyelid

- ✧ Most infants with OBPP will experience spontaneous recovery by 4 months of age, approximately 1.1 to 2.2 per 10,000 children are affected by persistent OBPP (Al-Qattan et al., 2009; Anand and Birch, 2002; Chauhan et al., 2014).
- ✧ Due to the rare incidence of persistent OBPP there is limited evidence-based literature defining occupational therapy's (OT) role in providing intervention for individuals with this diagnosis. Even more rare is literature regarding OT's role in addressing pain for pediatric clients with OBPP.
- ✧ It has been observed clinically in the Seattle Children's Hospital (SCH) Brachial Plexus Clinic (BPC) that many patients with OBPP, or their parent proxies, report the presence of pain in the affected extremity throughout development in childhood and adolescence.
- ✧ It is within the scope of practice for OT's to address pain, as it is a body function that can impact participation in physical and social environments (AOTA, 2014, p. S7). OT can provide intervention by adapting and modifying meaningful activities, as well as presenting new activities that promote and develop enhanced participation (AOTA, 2014, p. S7).

FOCUSED QUESTION

What is evidence for the effect of occupational therapy interventions to manage pain associated with brachial plexus injury in patients with birth-related brachial plexus injury throughout development?

METHODS

- ✧ A literature search was completed using MedLine, CINAHL, PsychINFO, and PubMed databases
- ✧ Search terms for the literature search related to obstetric brachial plexus palsy, occupational therapy intervention, and the management of pain
- ✧ The final literature search included 23 articles that could be used to further inform program development
- ✧ From the literature search 15 articles were selected to create an evidence table to inform program development for OT management of pain in the SCH BPC
- ✧ Critically Appraised Topic (CAT) paper was written utilizing the evidence table
- ✧ CAT was utilized to provide evidence-base during formation of initial OT procedures to manage pain for patients at the SCH BPC
- ✧ CAT informed the initial draft of a home exercise program to provide to patients and families at SCH BPC

RESULTS

- ✧ Currently, there is not a standard for measuring pediatric pain in patients with brachial plexus palsy, iPluto is working to standardize the assessment of pain for this population (Pondaag & Malessy, 2018)
- ✧ Pain in obstetric brachial plexus palsy can present with symptoms of both musculoskeletal pain and neuropathic pain (Ho, Curtis, & Clarke, 2015)
- ✧ Children with OBPP may not identify the pain as neuropathic or chronic (Ho, Curtis, & Clarke, 2015)
- ✧ Those who undergo microsurgery to return function to the extremity more often demonstrate pain (Ho, Curtis, & Clarke, 2015)
- ✧ Pain can cause people to refrain from participating in meaningful activities (Robinson, Kennedy, and Harmon, 2011), in pediatric and adolescent patients this may impact the development of lifelong ADL and IADL involvement
- ✧ Occupational therapy has a role in pediatrics of facilitating the development of meaningful activities and addressing pain to promote habilitation in these meaningful activities
- ✧ Left untreated pain can have lasting effects such as reduced quality of life

PROGRAM DETAILS

- ✧ This is not the creation of an entirely new program but rather an enhancement in occupational therapy evidence-based knowledge and management of pain for children with obstetric brachial plexus palsy at Seattle Children's Hospital in the Brachial Plexus Clinic
- ✧ There are 4 key components that were found in the evidence-based literature that were presented to the clinic for implementation:

- Specialty OT**
 - Due to the small number of patients with persistent OBPP occupational therapists with specialized knowledge should collaborate with community-based therapists to share and inform current evidence-based practice working with this population
- APPT**
 - Adolescent Pediatric Pain Tool
 - Thorough assessment of pain which measures intensity, location, and quality of pain using a visual analogue scale, body outline diagram, and 60+ descriptive terms for experienced pain
 - Useful tool for identifying neurologic versus musculoskeletal pain
- Pain Education**
 - Verbal education for parents and patients regarding current identified pain
 - If a patient is experiencing pain parents and patients will be provided written handout regarding pain and OBPP
- Treating Pain**
 - Thorough verbal education if experienced pain is reported
 - Written handout which describes use of heat and resistive exercise to address pain associated with OBPP

BOTTOM LINE FOR OT

Early and ongoing evidence-based multidisciplinary treatment of OBPP is paramount to promote optimal patient development and function of the affected upper extremity. Currently, occupational therapy's role in treatment is to track patient function, provide parent education, provide intervention to maintain patient ROM, maintain patient functional ability of the affected UE, prescribe splints, and provide adaptive techniques to complete ADLs and IADLs when necessary.

It is within the scope of occupational therapy to expand our role on the interprofessional team in the treatment of patients with brachial plexus palsy. With emerging evidence-based interventions occupational therapists have the ability to promote improved function of the affected UE and decrease pain associated with this diagnosis.



(Kelly, 2014)

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- ※ The first proposed item to be implemented at SCH in the BPC for the occupational therapy management of pain in patients with OBPP is the use of the Adolescent Pediatric Pain Tool (APPT) during BPC visits. This tool has the child use a body outline to identify exactly where they experience pain on their own body. The APPT also uses a visual analogue scale to have the child identify the intensity of the pain. Lastly, the APPT provides a list of 67 words and phrases that describe pain for the child to utilize to identify their experience of pain (CITE).