

# Hydrotherapy as an Adjunct to Physiotherapy Management in an Infant with Obstetric Brachial Plexus Palsy: a Case Report

## BACKGROUND

Obstetric brachial palsy (OBPP) is one of the most complex traumatic peripheral nerve injuries, which frequently leads to considerable physical disability with progressive psychological and socioeconomic problems. A dynamic and comprehensive physiotherapy programme is highly important and absolutely necessary for its management. A variety of physiotherapeutic procedures are performed to support any spontaneous nerve recovery as well as to prevent and treat the consequences of denervation, such as pain, muscle weaknesses, atrophies, contractures, somatosensory deficits, subluxations/dislocations and motor dysfunctions. Hydrotherapy is used as an additional physiotherapeutic modality in the OBPP rehabilitation<sup>1,2</sup>. However, there is no evidence in the literature to suggest the use of hydrotherapy for the management of infants with OBPP.

## PURPOSE

The aim of this study was to investigate for first time the feasibility and efficacy of a specific 4-month hydrotherapy programme, as an adjunct to early physiotherapy intervention, on upper extremity functional movement in an infant with OBPP.

## METHODS

In this case report a 3-month-old female infant with left Erb's palsy, presented with muscle weakness and loss of motion with typical "waiter's-tip" position of the arm. The infant participated in 17 hydrotherapy sessions of 45 minutes each (once a week). The hydrotherapy programme was conducted in an indoor therapy pool, heated to 32°C, by a specialized and experienced paediatric physiotherapist. The hydrotherapy programme included specific therapeutic exercises, through therapeutic handling and holding strategies based on the philosophy of Halliwick®-Aquatic Therapy (HAT)<sup>3</sup> and Bobath/Neurodevelopmental Treatment (NDT)<sup>4</sup>, for facilitating the active movement, maintaining the range of motion and enhancing the sensory perception of the involved arm. The infant received a standardized physiotherapy programme twice a week (since she was 25 days old). Active Movement Scale (AMS)<sup>5</sup> and videotaping prior to and after the intervention were used for recording potential improvements.

## RESULTS

Upper-extremity joint movements were improved based on AMS. Specifically, measures show an increase in shoulder flexion by 3 points, in shoulder abduction by 3 points, in shoulder external rotation by 2 points and in shoulder extension by 1 point. There was an increase in elbow flexion by 4 points and in forearm supination by 1 point. The wrist extension was increased by 2 points. Overall, there was a significant enhancement in the seven tested movements that averaged 33%. Improvements in functional use of the affected arm were documented by videotaping the use of the arm in functional bilateral activities, such as splashing around in water, reaching and grasping a toy, bring the hands or/and a toy to mouth.

## CONCLUSIONS

This is the first case report of a 3-month-old infant with OBPP that received hydrotherapy as an adjunct to the early physiotherapy care. The findings demonstrate that hydrotherapy combined with physiotherapy intervention may improve the motor function in an infant with OBPP. It is recommended that hydrotherapy may have a role in maintaining muscle extensibility and joint range of motion as well as in enhancing motor recovery of the involved limb.

## ACKNOWLEDGMENTS

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Activity Movement Scale Results

Joint movement	Pre	Post
Shoulder flexion	2	5
Shoulder abduction	2	5
Shoulder external rotation	0	2
Shoulder extension	0	1
Elbow flexion	2	6
Forearm supination	0	1
Wrist extension	5	7
Finger extension	7	7
Thumb extension	7	7

Active Motor Scale (AMS) <sup>5</sup>	
Observation	Muscle Grade
Gravity eliminated	
No contraction	0
Contraction, no motion	1
Motion 5% range	2
Motion 25% range	3
Full motion	4
Against gravity	
Motion 5% range	5
Motion 25% range	6
Full motion	7