CASE STUDY

USE OF AN ALTERNATIVE AND AUGMENTATIVE COMMUNICATION SYSTEM FOR A CHILD WITH CEREBRAL PALSY

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ABSTRACT

OBJECTIVE
Efficacy of using an Alternate and Augmentative Communication (AAC) method as a language facilitation technique with a child who presents with flaccid dysarthria due to paraplegic cerebral palsy (CP).
STUDY DESIGN
The study design is a Single Subject Case Study
METHODOLOGY
A 6 year old boy with CP coming for speech-language therapy since September, 2016. Communications board (a low-tech AAC); along with MAKATON Pakistan (an unaided AAC) were the AAC systems used with the child. The child was taught to use it by way of modeling, and through motor and speech imitation. The clinicians and the supervisor ensured that the caregiver was taught how to use the communication board, for its generalization at home.
RESULTS
Using AAC systems with children diagnosed as having age appropriate or near age appropriate cognitive abilities with cerebral palsy manifesting flaccid dysarthria of speech; is an effective and efficient method of developing successful communicative behaviors.
CONCLUSION
The study concluded that in light of the positive prognosis observed in the IB's overall communicative abilities, despite the lack of early intervention, the decision of using a combination of AAC methods with a child diagnosed with CP has proven to be a successful one.

KEYWORDS
AAC, Pakistani Makaton, Communication Board, Cerebral Palsy, Flaccid Dysarthria, Speech-Language, Communicative Behavior, Children

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INTRODUCTION

Cerebral Palsy (CP) has neurogenic origin or may be caused by maternal infections, illness, diabetes, hypertension, malnutrition, during the perinatal, natal and postnatal period. Common types of cerebral palsy are the spastic, flaccid, ataxic or mixed types, determined by the site of lesion in the brain[1,2].

CP detrimentally affects gross and fine motor development, and speech-language skills varying in degree of severity across receptive-expressive language, speech (articulation), voice (intensity, pitch and quality) and fluency, depending on etiology[3-5]. CP children greatly benefit from early intervention, a team of pediatric neurologists, physical, occupational, and speech-language therapists, working towards their re/habilitation[2]. Other healthcare professionals such as otolaryngologists, audiologists, psychologists and later the (special) educationists may be included in the team for re/habilitation of co-morbid conditions such as hearing loss or global developmental delay.

CP Children greatly benefit from the use of low and/or high-tech alternative and augmentative communication (AAC) systems. A thorough assessment of receptive-expressive speech and language determines candidacy for any AAC[6].

IB (initials used to maintain confidentiality and patient privacy) a 6-year old boy diagnosed with diaplegic, mixed type of cerebral palsy and concomitant flaccid dysarthria of speech; with severely delayed expressive language skills, and significantly better receptive language skills, was the eldest sibling amongst two children, in a bilingual nuclear family. He had been receiving physical therapy since over five years, but had never been seen by a speech-language therapist. Receptive-expressive language skills were not assessed formerly for lack of availability of standardized tools of language assessment for non-verbal children. His receptive language age was around 36-40 months and expressive language age about 12-18 months, through informal assessments performed via parent interviews, and observation of parent child interactions over two sessions.

METHODOLGY

Pre-Therapy Communicative Behaviors

IB's caregivers invariably fulfilled all requirements, seldom leaving him any opportunity to express himself for his needs, although he vocalized with communicative intent through eye gaze, facial expressions, crying, yelling/shouting and making happy sounds. The parents and caregivers were counseled after the informal assessment to ensure IB had opportunities to communicate his needs non-verbally through natural gestures or verbally through vocalizations before they fulfilled them for him. Having flaccid dysarthria, with speech impairment in all parameters of respiration, phonation, articulation and resonance[1].

Decision for AAC

Speech-language therapy commenced with AAC after assessment of IB's cognitive skills, communicative behaviors and functions[7]. A custom built low-tech portable wooden communication board (24 inches long, 18 inches broad), and two no-tech methods of unaided communication (1) natural gestures (pointing), and (2) MAKATON language, Pakistan bridged the gap between communicative intent and fulfillment of need.

Simultaneous oromotor exercises for lip closure, increasing lingual ROM, including tongue protrusion, elevation and lateralization, using edibles strengthened IB's oral musculature, for developing speech.[5] Honey and ice (thermo tactile stimulation for the labial muscles, and flavored chewy tubes) helped labial and lingual movements; increased sensory awareness and jaw stability. Nutella excellently re-inforced lip closure and tongue elevation tasks, but failed to elicit successful tongue movements as IB was eager to eat the chocolate.

Current Communicative Status

IB received therapy bi-weekly over 30-45 minutes with presence (+) or absence (-) of responses noted. He required constant modeling, with visual, tactile, kinesthetic and verbal prompts which reduced in latter sessions. After continuous speech drills combined with oromotor exercises for strengthening labial seal in bilabials /m/ /p/ /b/; IB showed increased speech intelligibility for the bilabial/m.

The communication board could stand on the table, at eye level, or could even be mounted on a wall for easier access by IB and communicative partners. Using the communication board employed good sitting, appropriate posture, pointing, eye-gazing, visual scanning, and simple row/-column scanning[8]. In case he needed something which was not among the small nine pictures he could point to the desired item from the big theme picture. The picture cards included semantic categories of nominals, action words, greetings, and questions, from MAKATON language Pakistan. The cards with MAKATON Symbols were durable and could easily be switched with respect to the day's context, but were not used in this study[8-10]. Communication board usage was demonstrated to IB, so as to help him internalize the concept of pointing towards the picture card on the board when he needed something, and also use speech along with the MAKATON sign. IB successfully internalized "What do you want?" and learnt to scan and point to the desired picture from among the picture cards placed on the communication board. The picture

was placed in the sentence area, and he was taught to use MAKATON language and speak the word imitating the speech-language therapist, before getting the desired item. Approximations of a desired word were accepted as correct productions and re-enforced through profuse verbal praise[8,9].

IB said "yes" and "no" (*han+ and *nahi+ in Urdu) on imitation, with partial speech intelligibility, at first, as he progressed steadily, the verbal prompts were decreased. He was taught to request for an item he desired, through consistent verbal prompting, learning it after 5-7 sessions, and progressing to 'actions' for declaratives. He required maximum modeling and prompting whilst learning these words.

IB currently approximates two words together, from the MAKATON language, with partial speech intelligibility and pointing to the picture on the communication board with cues. It is evident that IB internalizes language, implementing metalinguistic and pragmatic use of the signs. The pattern of: point+sign+say the word=getting what I want, has been successfully established[10].

RESULTS AND DISCUSSION

The oromotor exercises conducted initially with food items and verbal prompts elicited successful responses. Lip rounding was best learnt whilst the lip seal was most poor. Licking of chocolate for tongue protrusion was achieved with 30% success.

Speech drills on four monosyllabic plosives /b/, /m/, /k/, /g/ were performed to stimulate verbal output. IB learnt the bilabials far better than the linguovelars, although he had considerable difficulty learning to close his mouth for a lip seal. This gives evidence that oromotor exercises may not perpetuate successful acquisition of speech; warranting further research. The linguovelars were targeted because a spontaneous /k/ syllable was produced as a happy sound.

The communication board was used with IB across eleven target words that had high functional value as they were meant to be spontaneously used by him to communicate his needs. Words which had functional application showed a significantly higher frequency of learning, i.e."yes" (*han+ in Urdu) "bye," "eat," "drink," and "biscuit," were learnt easily, and IB enjoyed using them with appropriate spontaneity. The words "car," and "hello," followed closely at 70% frequency; while the refusal "no" was learnt at 60% and "give," at 50%.

CONCLUSION

Lack of early intervention, a combination of AAC methods with a child having cerebral palsy proved to be successful. The AAC systems were carefully selected to suit his learning and cognitive abilities.

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