

Case Study

Effectiveness of Conventional and Alternative Approach for Treating Cerebral Palsy- A Case Study

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ABSTRACT

The purpose of this case is to explore how effective the conventional approach is in the treatment of cerebral palsy along with how the recent advances in both traditional and alternative approaches can help in the managing this neurological condition. This paper involves a case study about a 4-year-old boy diagnosed with cerebral palsy.

Keywords: cerebral palsy, occupational therapy, physical therapy, speech therapy, birth history, treatment methods, advances, fine motor skills, gross motor skills

Cerebral Palsy is a type of neurological condition that effects the individual's movement and balance. It affects different function in body including gait, movement, posture, tone, coordination. (Cerebral Palsy Guide, n.d.).

This neurological condition is having multiple causal factors. It is usually caused to early damage or brain injury that occurs before the cerebral part of the brain is developed. Brain develops till the first two years and any changes during that might affect the development. Any damage during the prenatal, perinatal and postnatal phase might be a major factor contributing towards development of cerebral palsy. Prenatal factors like bleeding, preterm antibiotics, exposure to toxins and chemicals, accidents etc can contribute. Perinatal factors like premature birth, complexity during the birthing process, delayed crying, excess bleeding etc can be the causal factor. Postnatal factors like infections, lack of oxygen, bool clotting also contributes towards the developmental of this neurological condition. (Kriger, 2006; Vitrikas., et al 2020). The initial symptoms that might indicate the developmental of cerebral palsy include poor posture, body control, difficulty maintaining balance, speech delays, neurodevelopmental delays, poor gross and fine motor skills.

Some of the therapy that are used for the management and treatment include occupational, physical and speech therapy.

Physical therapy: Physical therapy includes working on the improving the flexibility, mobility, coordination, movement and posture. Physical therapy focuses on the location of there is the issue in the muscles like reducing muscle tension, or gaining better control over

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the body, or using techniques to target issue pertaining to abnormal spine curvature, knew problem, gait issue, short limb problem, deformity in hand and legs. Exercises and massages help in improving flexibility and muscle tightening. Assistance in sitting and walking can be helpful for child to improve their posture. Certain equipment's are used like weighed jacket, weighed bands for legs and hands, massagers for sensory integration, exercise ball and toys, personalized leg and foot bandages or shoes that provide support while walking. (Cerebral Palsy Guide, n.d.).

Occupational therapy: occupational therapy helps in improving both fine and gross motor skills through number of exercises. For fine motor skill activities like pixels, or putting beads into a string, squeezing toys, etc. this improves muscle strength. Occupational therapy also involves working on upper body movements, balance, visual perception improvement and self-care. Sensory integration can also be included which help in improving individual's ability to receive signals, interpreting them and responding in response to them. This is done through number of ways like electrical sensation through massagers, brushes, playing with dough, making them feel different textures. (Cerebral Palsy Guide, n.d.).

Speech therapy: speech therapy can help in improving chewing, swallowing, sound, pitch, language, vocabulary, word formation etc. Different forms of therapy can be used like articulating speech through flashcards or speech cards where the therapist makes sound while showing that card, encouraging mirroring. Massaging mouth to improve the strength along with those blowing exercises. Using tools like chewable toys to improve the strength of facial muscles. Using association cards to make them learn and understand word association. (Cerebral Palsy Guide, n.d.).

The case study talks about a 4-year-old boy diagnosed with cerebral palsy when he was 1.5 years old. He was brought into the clinic after the referral from the general physician. The parents noticed the developmental delays and consulted the general physician after that he was referred to the clinic for psychological assessment.

CASE CONCEPTUALIZATION

Master T, is a 4-year-old male, who came into the clinic at the age of 2 years old, after he was referred by his doctor for the psychological treatment along with the physical treatment. He came in with his parents and his aunt. The family reported the concerns including inability to maintain balance and posture, difficulty holding his head, no signs of walking, flat foot, speech delay and not able to take solid food till now. These symptoms were present from the starting and the parents first started to notice these symptoms when the child did not hit his developmental milestone like holding his head, one word and two-word sentences, walking, poor gross and fine motor skills.

After the consultation with general physician, they got some test done which showed cranial abnormality in certain areas as well. This led to the diagnosis of cerebral palsy. After that the child was referred to the clinic specialized in neurodevelopmental disorder for the treatment. Upon the referral, history about the child, parents and birth history was taken down. There was no psychological history of the family, physiological history entails diabetes and thyroid. The birth history revealed that the prenatal history was complicated as the mother experienced bleeding during the fourth month and after that she was advised to take bed rest for the whole pregnancy. The child was a premature birth in the 7.5 month and weighed 2kgs. There was a delay in the cry as well. The APGAR score was not known by the parents.

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After the birth the child as kept under observation for a month due to premature birth and breathing problem.

After that the assessment (General Movement assessment, Gillette Functional ability questionnaire) and diagnosis, the treatment plan was laid down according to his needs at that moment. Master T's treatment entails physical therapy, occupational therapy, speech therapy and medications.

In case of Master T, personalized bandages and shoes were designed for him to walk with assistance. He used to walk while wearing them with full support of the physical therapist. Along with that electrical muscle stimulations were used. Since he had difficulty in chewing, face massages were given along with tools used like chewable toys to increase the stimulation in that area. Number of activities were integrated like putting ice-cream sticks in a bottle, games like pixels which involved using tweezers to pick up beads and then placing them onto the board, putting beads into a string, puzzles, using cloth pins and placing them onto a moving swing and sensory integration through massagers, and rolling big play boll over the body.

Along with that, activities like chewable toys to improve control over mouth and building muscle strength of mouth. Along with that flashcards were used to make them mirror the sounds used by the therapist. Massages were also done to strengthen the muscles.

In case of Master T's, no medication was prescribed as of now relating to his condition.

Research evidence on effectiveness of conventional and alternative treatment

Researches have shown that occupational, speech, and physical therapy as a treatment approach provide good results in terms of improvement of gross and finer motor skills as well as speech. One of the study done showed that these therapies when accompanied with family centered and focused on what the individual actually needs and are designed in a structured way, help with the progress (Palisano., et al (2019).

Many researches have been done when it comes to what cerebral palsy is and how it is caused and what are various intervention plan and treatment procedures. Recent advances in treatment for cerebral palsy has shown better outcome for the individual. These researches show the effectiveness of different therapy modalities. These involve surgical methods like cell transplant, stem cell transfer (Paul et al.,2022) or rehabilitation method (Tursunovna., et al 2024), music therapy, physiotherapy, hippotherapy, movement therapy, electrical stimulation, aquatic therapy, etc. are also came as a recent treatment procedure for cerebral palsy (Sharma., et al 2023). Hippotherapy for an instance has proven to be effective as an alternative therapy. In this therapy horseback riding is used as a form of treatment in which the movements help in improving the balance, muscle tone, and sensory integration (Tungland., 2018). Aquatic therapy is used to improve the gait and posture of the individual where they use water a medium to perform exercises to increase or improve mobility and strength (Merrell., et al 2007. Mohanty., et al 2023). Along with music therapy has proven to useful in treating cerebral palsy by augment the communication. Through the usage of auditory, visual stimuli or even tactile stimuli while performing, singing or playing any instrument might improve the gross as well as fine motor skills. Music therapy has been studied and proven to be useful for improving the neuroplasticity and providing a benefit of improved language and speech. The usage of instruments especially works towards the fine

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motor deficit. Treadmills, virtual feedback and rehabilitation seemed to have improved gait function for the children with CP. (Sharma et al., 2023)

DISCUSSION

Cerebral palsy is type of neurological disorder that affects the movement and balance resulting in difficulty with daily life activity and affecting all areas of life including social, occupational and personal. There are number of causal factors that like prenatal complexities, brain injury during cerebral development of brain, perinatal issues like premature birth, delayed crying and postnatal factors like exposure to toxins. Number of treatment strategies that are beneficial for managing and treating cerebral palsy are occupational, physical and speech therapy.

The case explores the presentation of symptoms of a neurological condition known as cerebral palsy in a 4-year-old boy, who first came into the clinic when he years 2 years old with the persisting symptoms of poor balance, control, posture, fine and gross motor skills along with speech delays. He showed the developmental delays in walking, and speech. Birth and developmental history showed complexities during prenatal and perinatal phase.

Based on the symptoms and assessments done, the management and treatment plan was devised that consisted combination of occupational, physical and speech therapy. Activities like pixels in which tweezers were used to pickup beads for improving fine motor skills, facial massages and oral chewable toys for building up of muscle strength in the mouth, electrical stimulations, foot bandages and shoes that were used for training him to walk and visual cards and sound for speech improvement. All of these treatment strategies were planned 5 times a week for 2 hours followed by home based activities till now and these strategies showed improvement in the overall functionality. He was able to maintain his head balance better than earlier, there was improvement in the fine motor skills where he was able to perform all the activities in a better way that earlier. The pencil grabbing was there which was absent earlier. From total liquid food he was shifted to semi-solid food. There was better control on the body balance and posture. Earlier, there was no balance while sitting on a chair but after the therapies provided, he is able to sit on a chair independently without any external support. But there was still no improvement in the walking and speech and inadequate gross motor skills.

Alternative therapies have been researched and according to them these can be effective as treatment strategy and focusing on areas which may not be targeted by traditional approaches. Such recent advances involve surgical methods like cell transplant, stem cell transfer (Paul et al.,2022) or rehabilitation method (Tursunovna., et al 2024), music therapy, physiotherapy, hippotherapy, movement therapy, electrical stimulation, aquatic therapy, etc. are also came as a recent treatment procedure for cerebral palsy. The usage of instruments especially works towards the fine motor deficit. Treadmills, virtual feedback and rehabilitation seemed to have improved gait function for the children with CP. (Sharma et al., 2023)

CONCLUSION

Master T's case illustrates the presentation of neurological condition known as cerebral palsy in a 4-year-old boy, who was brought to clinic with the persisting symptoms of poor balance, posture, inability to walk without support, no speech and poor fine and gross motor skills. The birth history indicates towards the possible causes for the same, along with complexities during pregnancy and after the birth, premature birth, low birth weight and

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delayed crying. The treatment that has been proven useful for managing cerebral palsy are occupational therapy, physical therapy, speech therapy and medications. All of these methods help in improving the fine and gross motor skills along with the focus on improving daily life activities and independency.

Many researched showed how these therapies are proven to be useful for managing this neurological condition. Many recent advances in the treatment strategies include approaches like aquatic technique, hippotherapy, electrical stimulation, rehabilitation, visual rehabilitation, and music therapy. These approaches showed evident improvement in the condition and help the individuals to achieve independence at some level in their daily life activities.

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Conflict of Interest

The author(s) declared no conflict of interest.

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