

CASE STUDY- CEREBRAL PALSY

Dhruv Kumar

Vasant valley School, New Delhi

ABSTRACT

Cerebral palsy is an abnormality of motor function and postural tone that is acquired at an early age, in some cases even before birth. It is the most common form of childhood disability. Case study refers to the in-depth study of a particular case. A case study employs multiple methods for collecting information such as interview, observation and psychological tests from a variety of respondents who in some way or the other might be associated with the case and can provide useful information. The information was collected by interviewing the respondent as well as the special educator(the teacher who assists the child at Vasant Valley school). In the case study, the details of the symptoms, causes, treatment, prevention, and management of the respondent were documented.

Keywords: Cerebral Palsy, AFO, orthopaedic, disorders, over-emphasised

Introduction

Cerebral palsy is an abnormality of motor function and postural tone that is acquired at an early age, in some cases even before birth.

It is the most common form of childhood disability.

Cerebral palsy affects the muscles- The condition makes it hard to move certain parts of the body, therefore, there are many degrees of severity. Because of damage to certain parts of the brain, voluntary or involuntary movements can be affected.

Cerebral palsy is not contagious, it does not necessarily affect intelligence or cognitive ability, and it is not progressive, hence it does not get worse with age. Cerebral palsy affects approximately one to three out of every thousand children born. However, it is much higher in infants born with very low weight and in premature infants. The brain lesion is the result of a one-time brain injury. Whatever brain damage that occurred at the time of the injury is the extent of damage for the rest of the child's life.

Symptoms

An infant with cerebral palsy may have muscular and movement problems, including poor muscle tone. Muscle tone refers to a person's automatic ability to tighten and relax muscle when required.

Features can include:

- overdeveloped or underdeveloped muscles, leading to stiff or floppy movements
- poor coordination and balance, known as ataxia
- involuntary, slow writhing movements, or athetosis
- stiff muscles that contract abnormally, known as spastic paralysis
- lying down in awkward positions
- favoring one side of the body over the other
- a limited range of movement
- late achievement of developmental milestones such as crawling, walking, or speaking
- problems controlling bladder and bowel movements
- seizures
- drooling, and problems with feeding, sucking, and swallowing

When cerebral palsy is the result of lack of oxygen during birth, the infant almost always suffers severe neonatal encephalopathy with symptoms during the first few days of life. These symptoms include:

- seizures
- irritability
- feeding and respiratory problems
- coma depending on the severity.

Symptoms normally start to show during the first 3 years of life. Many of the symptoms observed in these children are related to the primary problem that is impaired motor functions. For example, developmental motor delay, gait disorders (person's manner of walking), poor fine and gross motor coordination, swallowing disorders, or speech delay are all the result of the basic motor disorder.

Causes

- The most common cause of cerebral palsy is due to prenatal injuries. Most often, the damage occurs before birth, probably during the first 6 months of pregnancy. Premature birth is a risk

factor for cerebral palsy. The premature brain is at a high risk of bleeding, and when severe enough, it can result in cerebral palsy. Children that are born prematurely can also develop serious respiratory distress due to immature and poorly developed lungs. This can lead to periods of decreased oxygen delivered to the brain that might result in cerebral palsy. Even though it is widely believed that the most common cause of cerebral palsy is a lack of oxygen to the brain during delivery (birth asphyxia), it is actually a very rare cause of cerebral palsy.

Factors that may contribute to a higher risk of cerebral palsy include:

- multiple births, for example, twins
- sexually transmitted infections (STIs)
- consumption of alcohol, illegal drugs, or toxic substances during pregnancy
- malnourishment during pregnancy

In rare instances, birth related accidents during particularly difficult deliveries can cause brain damage and result in cerebral palsy.

During delivery, the risk is increased by the following factors:

- emergency cesarean
- the second stage of labor is prolonged
- vacuum extraction is used during delivery
- umbilical cord abnormalities
- A poorly understood brain process observed in some premature infants is called periventricular leukomalacia. This is a disorder in which holes form in the white matter of the premature infant's brain. The white matter is necessary for the normal processing of signals that are transmitted throughout the brain, and from the brain to the rest of the body. PVL is a strikingly common causal factor among children with Cerebral Palsy that leads to intellectual impairment and spasticity. Approximately 60-100% of infants with periventricular leukomalacia are diagnosed with Cerebral Palsy.
- Abnormal development of the brain:

Disruption of brain development can affect the way the brain communicates with the body's muscles and other functions. Damage can stem from mutations in the genes responsible for brain development, certain infections such as a parasite infection, herpes and herpes-like viruses, and head trauma.

- Intracranial hemorrhage:

Sometimes, bleeding inside the brain happens when a foetus experiences a stroke. Bleeding in the brain can stop the supply of blood to vital brain tissues, and these tissues can become damaged or die.

Several factors can cause a stroke in a fetus during pregnancy:

- a blood clot in the placenta that blocks the flow of blood
- a clotting disorder in the fetus
- inflammation of the placenta
- Brain damage after birth:

A small proportion of cases happen because of damage after birth. This can happen because of an infection such as meningitis, a head injury, a drowning accident, or poisoning. When damage occurs, it will be soon after the birth. With age, the human brain becomes more resilient and able withstand more damage.

Treatment

There is **no cure** for cerebral palsy, but treatment can help manage symptoms and increase independence. Most of the causes of cerebral palsy do not have specific, curative treatments. However, children with cerebral palsy present many medical problems that can be treated or prevented.

The extension and severity of the brain lesion(abnormality seen on a brain imaging test) is the leading factor in the magnitude of the motor deficit. Hence the way they are present varies from child to child. For that reason, it is difficult to describe a clinical picture that will satisfy every child with cerebral palsy. In addition, individual conditions add more to the uniqueness of the presentation of the child with cerebral palsy. For example some children may be blind, while others may have normal vision; or some children may have severe cognitive delay. The clinical presentation, even though with many common features, is very much unique for a particular child.

The initial stage of treatment involves an interdisciplinary team, consisting of a paediatrician, a neurologist, a mental health practitioner, an orthopaedic surgeon, a physical therapist, a speech therapist, and an occupational therapist. Each member of the team has important, independent contributions to make in the care of the affected child.

- The physical therapist evaluates muscle tone, strength, and gait (walking).

- The occupational therapist reviews the child's ability to perform tasks of self-help and care -- from feeding to manual dexterity.
- The speech therapist evaluates the child's ability to speak and understand speech.

An individual care plan will address the needs of the child and the family. As the child gets older, the plan will be reviewed and revised. Treatment depends entirely on individual needs. The aim is to help the child achieve as much independence as possible.

Prevention

Most of the time, it is not possible to prevent cerebral palsy, but some actions can reduce the risk. It cannot be over-emphasised that the most important person in the lives of children with cerebral palsy is their caregiver. A woman who is planning to have a child should ensure that all her vaccinations are up-to-date.

During pregnancy, it is important to:

- attend all antenatal(pregnancy related) appointments
- avoid alcohol, tobacco, and illegal drugs
- carry out regular exercise, according to the physician's advice

Seek early and continuous prenatal care. Regular visits to your doctor during your pregnancy are a good way to reduce health risks to you and your unborn baby. Seeing your doctor regularly can help prevent premature birth, low birth weight and infections. The caregiver, whether a parent or another person, must be able to recognise a child's needs and provide for him or her in a loving, positive environment.

Research methods used

Case study:

It refers to the in-depth study of a particular case. A case study employs multiple methods for collecting information such as interview, observation and psychological tests from a variety of respondents who in some way or the other might be associated with the case and can provide useful information. Researchers focus on cases which can provide critical information or new learning on less understood phenomena. Case studies provide a narrative or detailed descriptions of the events that take place in a person's life.

Merits- Freud's insights that led to the development of psychoanalytic theory emerged from his observations and showed that meticulous records must be maintained on individual cases. Similarly, Piaget developed his theory of cognitive development on the basis of observations of his three children.

Demerits- Case studies provide detailed in-depth depictions of people's lives. However, while generalising on the basis of individual cases one needs to be very cautious. The problem of validity in a single case study is quite challenging. It is recommended that the information should be collected using multiple strategies from different sources of information by a number of investigators. A case study is costly and very time consuming, and is hence difficult to replicate.

Observation:

Observational method is a powerful tool of psychological enquiry. It is an effective method of describing behaviour.

Steps of observation:

- Selection- Psychologists select a particular behaviour for observation.
- Recording- The researcher records the selected behaviour using different means such as marking tallies for behaviour, taking notes describing each activity in detail.
- Analysis of data- Psychologists analyse whatever they have recored in order to derive meaning out of it.

Types of observations:

- Naturalistic observation- This refers to observations done in natural and real life settings. The observer makes no effort to control or manipulate the surroundings/ situation. This type of observation in conducted in schools and hospitals.
- Controlled observation- Thos type of observation is done in laboratory experiments.
- Participant observation-In this observation the observer becomes a part of the group being observed.
- Non-participant observation- In this type of observation the observer isn't physically a part of the group being observed, a group or people are observed from a distance through camera.

Advantages of observational method:

It enables the researcher to study people and their behaviour in a naturalistic situation, as it occurs.

Disadvantages of observational method:

However, the observation method is labour intensive, time consuming, and is susceptible to the observer's bias. Our observation is influenced by our values and beliefs about the person or the event. The scientific objectivity is lost if the experimenter interacts with the participants.

Interview:

An interview is a purposeful activity conducted to derive factual information, opinions and attitudes, and reasons for particular behaviour, etc. from the respondents. It is generally conducted face-to-face but sometimes it can also take place over the phone.

There can be two broad types of interviews: **structured or standardised**.

A structured interview is one where the questions in the schedule are written clearly in a particular sequence. The interviewer has little or no liberty to make changes in the wordings of the questions or the order in which they are to be asked. Such questions are close-ended questions and have specific responses.

An unstructured interview the interviewer has the flexibility to take decisions about the questions to be asked, the wording of the questions, and the sequence in which questions are to be asked. Such questions are open-ended questions and do not have specified responses, and can be answered the way the responder wants to.

Merits- The interview method helps in obtaining in-depth information. It is flexible and adaptable to individual situations. It can be used even with children, and non-literate persons. An interviewer can know whether the respondent understands the questions, and can repeat or paraphrase questions.

Demerits- However, interviews require time. Often getting information from one person may take an hour or more which may not be cost-effective. Interviewing is a skill that requires proper training.

Characteristics:

Physical:

- She wears AFO's for shaping her ankle. It provides maximum ankle stability.
- She used to be on a wheelchair when she came to school, but now she is able to walk by herself.
- Cannot play sports and has difficulty in running, has an unstable walk.
- Took time to recover by undergoing multiple surgeries
- She has developed upper body strength by zip-lining and climbing
- Poor body balance
- She will always need support for walking, running and other physically demanding activities.

Sensory/motor coordination:

- Poor oro motor skills- Constantly drooling, not able to chew food properly, often spills her curry and rice
- Improved finger dexterity
- Poor fine motor skills- Not well defined grip, therefore she takes time to write and lacks finger strength.

Concept formation:

- Pre- teaching concepts so that she has a clear understanding of what is happening in class
- Good at processing information
- At par with her peers.

Self help skills:

- Can get up when she falls down
- Needs help in wearing clothes
- She is able to clean herself and comb her hair (with mild assistance).

Academic skills:

- Needs practice in her subjects
- Strong conceptual understanding

- Very bright academically, and has a strong base.
- She is very consistent with her work and maintains regularity.
- While speaking to her about my favourite subject I saw the result of her Math Olympiad. She ranked 13th in school, which proves she is very bright.

Interpersonal skills:

- Polite child in school, but opposite at home. She takes out her pent up anger on her younger brother.
- She used to be very shy and introverted, but now she is much more outgoing
- Now she organises play dates and spends her free time with her friends
- On the basis of my observations, it was nice to see that my subject was comfortable having conversations with me.

Management:

- She goes for therapy to junior school during PE lessons :
- Occupational therapy- She has weak muscles. In order to build muscle strength, takes happens often so that she can maintain it for longer.
- Therapy ball- used for physical therapy, benefit the body by becoming stronger. It helps develop gross motor skills, postural stability, and bilateral coordination.
- She gets extra time during her reviews because she takes time writing (fine motor skill)
- She will get a scribe during her exams class 8 onwards

Conclusion:

This journey of interacting and getting to know my subject has had an everlasting impact on me. I remember a conversation with my subject the weekend after the track and field meet. I was unhappy about how I did not win the medal in my final race. I told my subject and narrated how I lost my cross country race by a very very small margin. My subject smiled, she was happy for me, happy that I was able to run that race and in-fact was one of the fastest boys in school. She told me that it was her dream(as written in her road map) that one day she can also run, run as fast as me. That conversation has impacted me so deeply that I stopped thinking about the race in the small scheme of things. Instead I was filled with gratitude that I was able to inspire someone else by giving them a goal to work towards. That for me is greater than any medal. I would like to help my subject achieve her dream in the near future and I would like to wish her all the best!

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