ISSN: 2993-5407

Review Article

Translational Medicine : Open Access

Cerebral Palsy: Opinions on Development, Occurrence, Presentation and Management

Abhijay B. Shah, Dev Andharia and Dev Desai*

Smt. NHL Municipal Medical College, Ahmedabad, India.

***Corresponding Author**
Dev Desai, Smt. NHL Municipal Medical College, Ahmedabad, India.

Submitted: 2023, June 19; **Accepted:** 2023, July 20; **Published:** 2023, Sep 11

Citation: Shah. A. B., Andharia. D., Desai. D. (2023). Cerebral Palsy: Opinions on Development, Occurrence, Presentation and Management. *Transl Med OA, 1*(2), 48-49.

Abstract

Cerebral palsy (CP) is the most common childhood disability affecting motor function as a result of injury to the underdeveloped brain, occurring in 2-3 children in every 1000 live births. However, CP as a disease is been studied well, and understood by the pathologist, general physicians, researchers, obstetricians, and paediatricians. The motor disorders of cerebral palsy are often associated with disturbances of sensation, perception, cognition, communication, and behaviour, epilepsy, and secondary musculoskeletal problems. There are multiple risk factors have been identified for CP in the last decade, likely; premature birth (before 37 weeks) and low birth weight (less than 2.7 KG) these. two are most classically associated with CP. Others include the mother's systemic illness, substance abuse, maternal undernutrition, Gestational diabetes, excessive bleeding per vagina, and preeclampsia, along with multiple gestations, C-section, vacuum-assisted delivery, forceps delivery, post-term delivery, induction of labour, obstructed labour, asphyxia, etc. When considered to be a movement disorder, it can be classified as spastic, dyskinetic, or ataxic. When considering the area of presentation, it can be quadriplegic, hemiplegic, diplegic, and monoplegic. Hypertonicity of the muscles is the most common symptom along with other motor issues such as impaired balance, coordination, and hand function. periventricular leukomalacia is the most common neurological finding seen. Keeping cognizance of the impairment these symptoms can cause to the independent functioning of the child in society, early diagnosis is extremely important.

Full Narrative Review

Cerebral palsy (CP) is the most common childhood disability affecting motor function as a result of injury to the underdeveloped brain, occurring in 2-3 children in every 1000 live births [1]. It is a condition that has indeed been reasonably well studied and observed for nearly two centuries. First described by William John Little in 1843 as spasticity occurring during infancy or the preterm period, it has since then been studied rigorously through the years with notable contributions from various scientists. The most complete modern definition of CP describes it as a group of permanent disorders of the development of movement and posture, causing activity limitation, which is attributed to nonprogressive disturbances occurring in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of sensation, perception, cognition, communication, and behaviour, by epilepsy, and by secondary musculoskeletal problems as determined by in 2006. With research, it is evident that multiple factors are responsible for causing CP, including premature birth (before 37 weeks) and low birth weight (less than 2.7 KG), the two classically described risk factors [2,3].

Malformation of the brain in the developmental period, genetic causes, in utero mother and fetus infections, mother's systemic illness, substance abuse, maternal undernutrition, swallowing harmful substances, fertility issues, and previous spontaneous termination of pregnancy have all been described as emergent risk factors predisposing to developing CP [4]. Gestational diabetes, excessive bleeding per vagina, and preeclampsia, along with multiple gestations, cotwin death, genetic contributions, and encephalopathy of prematurity have also been described as risk factors pertaining to the gestational period. C-section, vacuum-assisted delivery, forceps delivery, post-term delivery, induction of labour, obstructed labour, asphyxia, and meconium aspiration syndrome have also been attributed as risk factors [5].

When considered to be a movement disorder, it can be classified as spastic, dyskinetic, or ataxic. When considering the area of presentation, it can be quadriplegic, hemiplegic, diplegic, and monoplegic [3]. Upon further elaboration, dyskinetic symptoms are seen due to injury to the subcortical structure, and ataxic symptoms are seen due to cerebellar injuries dividing CP into spastic, affecting one or both sides of the body, dyskinetic involving involuntary movements with altered tone or choreoathetosis movements, and ataxic [6].

The presenting signs and symptoms consist of motor disorders, sensory deficits, and associated comorbidities. These signs and symptoms change as the child ages and new ones may appear. Thus, with advanced age, there is a worsening of the

neuromuscular system and functional capability of the child despite the damage in the brain being static [7]. Hypertonicity of the muscles is the most common symptom along with other motor issues such as impaired balance, coordination, and hand function [5]. Decreased neck control, stiffness, floppiness, arching of the back, lower extremity stiffness, and leg crossing while raising from the bed with incoordination of upper extremities are commonly observed symptoms while periventricular leukomalacia is the most common neurological finding seen. Keeping cognizance of the impairment these symptoms can cause to the independent functioning of the child in society, early diagnosis is extremely important. It should be done so taking into account the maternal history, gestational events, parturitional events, clinical as well as radiological observations, and any other relevant risk factors.

As far as the management of CP is concerned, modern science has only been able to provide avenues for symptomatic management to ease and improve the lifestyle of the affected patient. Clinicians and researchers have been able to identify and associate a host of conditions typically brought upon due to cerebral palsy such as seizures, spasticity, dysphagia, restrictive lung disease, constipation, GERD, bowel incontinence, recurrent infections, voice problems, dental caries and malocclusion of teeth [5].

The use of baclofen, dantrolene, and botulinum toxin has been advocated to manage spasticity followed by physiotherapy or occupational rehabilitation. Selective dorsal rhizotomy gets to the root of spasticity issues by cutting the nerves in the spinal column responsible for muscle stiffness. A host of orthopaedic ailments like equinovarus deformity, windswept deformity, bow legs, knock knees, kyphosis, scoliosis, and joint contractures have been identified with CP, all of which are treated by possible surgical reconstruction and appropriate rehabilitation techniques wherever possible. Cochlear implants to restore hearing, gastrostomies to circumvent gastric problems, cataract surgeries, and joint reconstruction - all have been found to aid in the functional rehabilitation of the patient. That being said, it must be taken into account that surgical intervention requires a skilled application and also poses a significant risk to the patient. Keeping this into consideration, surgical methods should be employed very carefully and diligently with a team of doctors from multiple specialties deciding the adequate avenue for treatment. Medical therapy should be employed to provide comfort as well as relief and possibly restoration as long and as well as possible, with surgery only being the final resort.

These modalities for management, cues for identification and prediction of the occurrence or development of CP, management, and awareness of risk factors, and eradication of stigmatization of the difficulties and past lack of interventions for CP patients to improve their lifestyle, all have played an important part in pioneering and paving the way forward towards having a CP inclusive society.

References

1. Vitrikas, K., Dalton, H., & Breish, D. (2020). Cerebral palsy: an overview. American family physician, 101(4), 213-220..
2. Rosenbaum, P., Paneth, N., Leviton, A., Goldstein, M., Bax, M., Damiano, D., ... & Jacobsson, B. (2007). A report: the definition and classification of cerebral palsy April 2006. Dev Med Child Neurol Suppl, 109(suppl 109), 8-14.
3. Sadowska, M., Sarecka-Hujar, B., & Kopyta, I. (2020). Cerebral palsy: current opinions on definition, epidemiology, risk factors, classification and treatment options. Neuropsychiatric disease and treatment, 1505-1518.
4. Stavsky, M., Mor, O., Mastrolia, S. A., Greenbaum, S., Than, N. G., & Erez, O. (2017). Cerebral palsy—trends in epidemiology and recent development in prenatal mechanisms of disease, treatment, and prevention. Frontiers in pediatrics, 5, 21.
5. Patel, D. R., Neelakantan, M., Pandher, K., & Merrick, J. (2020). Cerebral palsy in children: a clinical overview. Translational pediatrics, 9(Suppl 1), S125.
6. Graham, D., Paget, S. P., & Wimalasundera, N. (2019). Current thinking in the health care management of children with cerebral palsy. Medical Journal of Australia, 210(3), 129-135.
7. Ventola, C. L. (2014). Mobile devices and apps for health care professionals: uses and benefits. Pharmacy and Therapeutics, 39(5), 356.