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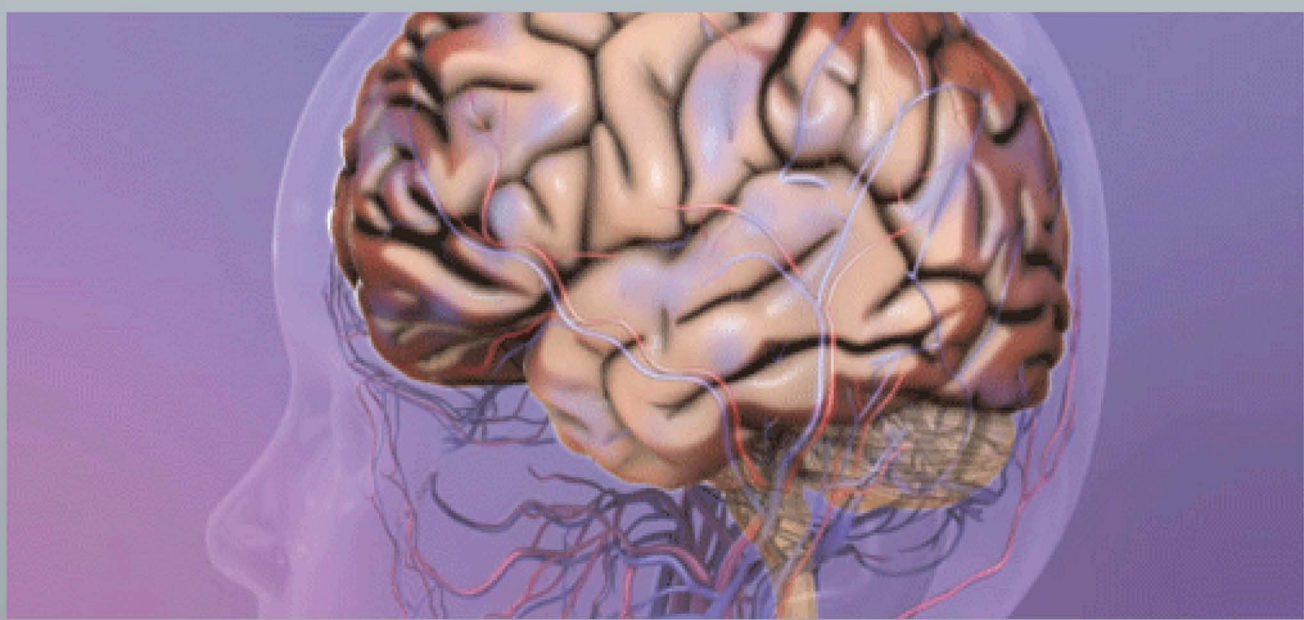
Cerebral Palsy and Early Stimulation



Vykuntaraju KN

Foreword
Veena Kalra

JAYPEE

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CHAPTER 3

Definition

ABSTRACT: In this chapter the definition of cerebral palsy has been discussed. The concept of CP is in some ways an artificial one since it groups together widely disparate conditions which have in common an early age of onset, a non-progressive motor disorder and shared problems of management and therapeutic and educational needs. As Krageloh-Mann and her colleague have pointed out, the term CP constitutes a useful sociomedical framework for certain motor disabled children with special needs. Cerebral palsy describes a group of disorders of the development of movement and posture, causing activity limitation, that are attributed to non-progressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of sensation, cognition, communication, perception, and/or behavior, and/ or by a seizure disorder.

KEYWORDS Group of disorders, Development of movement and posture, Activity limitation, Non-progressive disturbances, Disturbances of sensation, Cognition, Communication, Perception, Behavior, Seizure disorder

The concept of CP is in some ways an artificial one since it groups together widely disparate conditions which have in common an early age of onset, a non-progressive motor disorder and shared problems of management and therapeutic and educational needs. As Krageloh-Mann and her colleagues (1993) have pointed out, the term CP constitutes a useful socio-medical framework for certain motor-disabled children with special needs. (The plural form cerebral palsies is sometimes used as a reminder of the variety of disorders subsumed in the title).

The many attempts to define cerebral palsy have three common criteria:

1. That is a disorder of movement or posture,
2. That it results from some static abnormality in the brain, and
3. That it is acquired early in life.

However, these criteria are not specific enough to avoid variation in application. They do not specify:

a. How severe the movement disorder must be,
b. How to ensure that the cerebral abnormality is static,
c. The age by which the abnormality must be acquired, and
d. The age before which cerebral palsy cannot be reliably recognized.

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These additional criteria need not be uniform provided they are precisely specified, but even this poses problems.

LABEL A CHILD HAVING CEREBRAL PALSY

Child having cerebral palsy there must be:

1. Some form of brain damage involving motor pathway (d/d muscle palsy, orthopedic palsy, spinal palsies, and paraplegia).
2. Must be non-progressive, non-hereditary.
3. There may be dynamic clinical pattern despite a static pathology.
4. Non-curable but amenable to training.

Cerebral palsy describes a group of disorders of the development of movement and posture, causing activity limitation, that are attributed to non-progressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of sensation, cognition, communication, perception, and/or behavior, and/or by a seizure disorder.[2]

COMMENTARY ON THE TERMS AND CONCEPTS

Cerebral palsy (CP): It was generally agreed that the CP concept, essentially a clinical formulation based on phenomenology, remains useful in the current state of nosology. The term CP has, however, been variably used, with poor comparability across different places and times, indicating need for a consensual definition. Epidemiologists, in particular, require consistent terminology and concepts across time and space in order to identify changing patterns of diseases and disorders. It was proposed to retain the term to relate future research in CP to existing published work, but to clarify several aspects of the definition in this report.

"A group": There is general agreement that CP is a heterogeneous condition in terms of etiology as well as in types and severity of impairments. Several groupings are possible and warranted to serve different purposes. These groupings may show overlap. Therefore, the singular form CP is used (as opposed to cerebral palsies) as an umbrella term.

"Disorders": This refers to conditions in which there is disruption of the usual orderly processes of child biopsy-chosocial development. The disorders are persistent.

"Development": The notion of alteration in development is essential to the CP concept. It distinguishes CP from phenotypically similar disorders in children or adults due to late-acquired lesions, at a time when motor development is relatively well-developed. The development aspect of CP is also important with regard to management strategies that may include interventions that address the developmental consequences of the functional limitations associated with CP and interventions that are directed at the underlying neurobiological processes. The motor impairments of CP manifest very early in child development, usually before 18 months of age, with delayed or aberrant motor progress. The clinical picture of CP evolves with time, development, learning, training, therapies, and other factors.

"Movement and posture": Abnormal motor behavior is the core feature of CP. It is characterized by various abnormal patterns of movement and posture related to defective coordination of movements and/or regulation of muscle tone. However, patients with neurodevelopmental disabilities that do not primarily affect movement and posture are not considered to have CP.

"Causing": Activity limitations are presumed to be a consequence of motor disorder. Thus disorders of movement and posture that are not associated with activity limitations are not considered part the CP group.

"Activity limitation": The World Health Organization's international classification of functioning, disability and health speaks of activity as the execution of a task or action by an individual, and identifies activity limitation as difficulties an individual may have in executing activities. This term amplifies the previous of disability to recognize changing international concepts and terminology.

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"Attributed to": Understanding of developmental neurobiology (including the effects of genetic, chemical, and other influences on brain development) is increasing rapidly, such that it is becoming possible to identify structural and other evidence of brain maldevelopment in people with CP. As a consequence, structural-functional connections and correlations are becoming more clearly delineated than has previously been possible. It must, however, be acknowledged that at the present time a full understanding of causal pathways and mechanisms leading to CP remains elusive in many cases.

"Disturbances": This term refers to processes or events that in some way interrupt, damage, or otherwise influence the expected patterns of brain maturation, and result in permanent (but non-progressive) impairment of the brain. In a proportion of cases it is currently not possible to identify a specific disturbance or a specific timing of the events that appear to impact on maturation. These disturbances may include cerebral dysplasia.

"Fetal or infant": The specification fetal or infant reflects the idea that disturbances that occur very early in human biological development impact differently on motor function than disturbances that occur later, even those that occur in early childhood. There is no explicit upper age limit as, depending on aspects of motor functioning, the first two or three years of life may be concerned. Therefore, the notion of early lesion would appear more useful clinically than arbitrarily specified time limits. In practical terms, disturbance resulting in CP is presumed to occur before the affected function has developed (e.g. walking, manipulation etc.).

"Brain": The term brain includes the cerebrum, the cerebellum, and the brainstem. It excludes motor disorders of spinal, peripheral nerve, muscular or mechanical origin (note, however, that alterations in the neuromuscular and musculoskeletal systems may occur in CP as a consequence of the chronic motor impairment. These alterations may restrict further motor function or patients with CP, and be associated with secondary changes in skeletal alignment and/or functional capacity).

"Accompanied by": In addition to the disorder of movement and posture, people with CP often show other disorders or impairments. These may be caused by the same disturbances as those that caused CP and/or represent indirect consequences of the motor impairment and/or be caused by independent factors (hence the term accompanied by "as opposed to associated with").

"Sensation": Vision, hearing, and other sensory modalities may be affected.

"Cognition": Both global and specific cognitive processes may be affected, including attention. Note, however, that when a child has severely delayed cognition and no motor signs (except perhaps for some degree of hypertonicity or hypotonicity) it is not usual to include them within the concept of CP.

"Communication": Expressive and/or receptive communication and/or social interaction skills may be affected.

"Perception": The capacity to incorporate and interpret sensory and/or cognitive information may be impaired both as a function of the 'primary' disturbance(s) to which CP is attributed, and as a secondary consequence of activity limitations that restrict learning and perceptual development experiences.

"Behavior": This also includes behavioral problems in the context of psychiatric disorders, such as features of autism, ADHD, mood disorders and anxiety disorders.

"Seizure disorder": Virtually every seizure type and many epileptic syndromes may be seen in patients with CP. Rarely, the seizure disorder may be cause of CP (e.g. as consequence of prolonged infantile status epilepticus), or it may result in further motor impairment.

It is hoped that this definition will clarify the CP concept and allow unified use of the term both within and across the concerned fields. As it relies essentially on clinical aspects and does not require sophisticated technology, it should be possible to apply this definition very widely.

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Salient Features

- Covers epidemiology, etiology, early detection, diagnosis and management of various problems in children with cerebral palsy.
- Covers latest recommendations by various organizations.
- Provides essential and practical information in a concise form regarding the various problems seen in children with cerebral palsy.
- Strongly recommended for pediatric postgraduates, pediatric neurologist, practicing pediatricians, physiotherapists and occupational therapists.

Vykuntaraju KN MBBS DCH DNB (Pediatrics) MNAMS PGD-DN DM (Pediatric Neurology-AIIMS, New Delhi) is currently Assistant Professor of Pediatric Neurology, Indira Gandhi Institute of Child Health (Near NIMHANS), Bengaluru, Karnataka, India. He worked as a Consultant Pediatric Neurologist at BGS Global Hospital, Bengaluru from July 2010 to July 2011. He had more than 50 publications in indexed journals and attended several national and international conferences. He is a member of various organizations.



Reviewers

Strongly recommended for pediatric postgraduates, pediatric neurologists, practicing pediatricians, physiotherapists and occupational therapists.

—Prof DG Benakappa
Past President of Indian Academy of Pediatrics
Professor Emeritus, former founder Director of Indira Gandhi Institute of Child Health, Bengaluru

An excellent book with tremendous potentials provides updates on etiology, classification, diagnosis and management of cerebral palsy.

—Prof Shivananda
Former Professor and HOD of Bangalore Medical College and Research Institute
Director of Indira Gandhi Institute of Child Health, Bengaluru

This book, dedicated to children with cerebral palsy, is very much needed to medical community as well as parents of children with cerebral palsy. It has all the information in great detail. It is a book to pediatric students who find it difficult to understand this subject and perform well in DCH/MD/DNB examinations. This book will also make management of cerebral palsy rational, optimal and appropriate ensuring patient satisfaction. I whole heartedly recommend this book to all doctors and congratulate Dr Vykuntaraju on this great achievement.

—Dr Premalatha
Director, Professor and HOD of Pediatrics
Indira Gandhi Institute of Child Health, Bengaluru

A valuable and thorough practical guide for assessment of cerebral palsy and associated co-morbidities.

—Dr Govindraj M
Professor of Pediatrics, Medical Superintendent
Indira Gandhi Institute of Child Health, Bengaluru

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