

Cerebral Palsy: A Case Study

“Understanding Cerebral Palsy: Risk Factors, Clinical Manifestations, and Holistic Approaches to Management”

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Abstract: *Cerebral palsy (CP) represents a multifaceted neurological condition that continues to challenge clinicians, caregivers, and researchers alike. In my view, understanding CP requires more than just a medical lens—it demands an appreciation of its lifelong social and emotional dimensions. This article offers a holistic overview of cerebral palsy, tracing its definitions, classifications, risk factors, and management approaches while integrating insights from recent literature. It is evident that CP, though non-progressive, exerts evolving effects on muscle tone, coordination, and overall quality of life. The review highlights how both traditional and emerging interventions—from physiotherapy and occupational support to novel techniques like nanomedicine and stem cell therapy—reflect an expanding therapeutic horizon. What stands out is the persistent need for individualized care plans that blend medical precision with human compassion. The inclusion of a real-life case study adds a personal layer to this discussion, grounding theoretical insights in lived experience. This suggests that the future of CP management lies not merely in advanced diagnostics or surgery but in sustained interdisciplinary collaboration and family-centered care.*

Keywords: cerebral palsy, neurological disorder, rehabilitation, spasticity, holistic management

1. Introduction

Cerebral palsy (CP) is a neurological condition that can present as issues with muscle tone, posture, and/or a movement disorder. It's the result of damage to your brain during fetal development or another developmental disability that affects the way your brain develops. The signs and symptoms of CP appear early in childhood and can vary widely from person to person. Cerebral palsy, a leading factor in childhood impairment, is one of a variety of non-progressive postural and motor dysfunction syndromes. Recent definitions allow physicians to understand more than simply the movement problem that arises from an irreversible injury to the developing brain. Historically, cerebral palsy has been defined as a condition of movement and posture. Complementary and alternative therapies are frequently used by families treating their progeny with cerebral palsy holistically; nevertheless, the prevalence of their usage and the price of these alternatives remain unknown. Cerebral palsy is predominantly a mobility issue, but many children who have it also have additional disabilities that may lower their quality of life and shorten their lifespan [8]. Spasticity is one of the defining problems of cerebral palsy. Reduced movement control, weakness, lassitude, atypical tone, atypical posture, bone deformity due to the development of muscle contracture, and pain of increased intensity that may occur during active or passive movement as well as a result of flexor or extensor spasms, are some of the characteristics of upper motor neuron syndrome

2. Review of Literature

2.1 A Literature Review of Recent Advances in Cerebral Palsy

Sudip Paul (2023). This narrative review summarizes the latest advances in cerebral palsy and identifies where more research is required. Several studies on cerebral palsy were analyzed to generate a general idea of the prevalence of, risk factors associated with, and classification of cerebral palsy (CP). Different classification systems used for the classification of CP on a functional basis were also analyzed. Diagnosis systems used along with the prevention techniques were discussed. State-of-the-art treatment strategies for CP were also analyzed. Statistical distribution was performed based on the selected studies. Prevalence was found to be 2-3/1000 lives; the factors that can be correlated are gestational age and birth weight. The risk factors identified were preconception, prenatal, perinatal, and postnatal categories. According to the evidence, CP is classified into spastic (80%), dyskinetic (15%), and ataxic (5%) forms. Diagnosis approaches were based on clinical investigation and neurological examinations that include magnetic resonance imaging (MRI), biomarkers, and cranial ultrasound. The treatment procedures found were medical and surgical interventions, physiotherapy, occupational therapy, umbilical milking, nanomedicine, and stem cell therapy. Technological advancements in CP were also discussed. CP is the most common neuromotor disability with a prevalence of 2-3/1000 lives. The highest contributing risk factor is prematurity and being underweight. Several preventions and diagnostic techniques like MRI and ultrasound were being used. Treatment like cord blood treatment nanomedicine and stem cell therapy needs to be investigated further in the future to apply in clinical practice. Future studies are indicated in the context of technological advancements among cerebral palsy

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1.2 A Literature Review of Cerebral Palsy

Considerations Upon 249 Consecutive Patients S BOURGLEH, to determine the prevalence of cerebral palsy (C. P.) among children and to describe its main characteristics (clinical forms, treatment plan, and results). Material and Methods: 249 C. P were studied (120 boys and 129 girls, aged between 0 and 12 years) during 2, 321 consecutive clinic visits (incidence 10.7%) to a private pediatric orthopedic clinic in Jeddah, Saudi Arabia, between 2011 and 2016. Spastic type was the main clinical form (231=92.8%), spastic diplegia being the most frequent (166=71.9%). The treatment was complex: conservative only in 42.2%; surgery indicated in 149 (59.8%) cases was performed only in 81 cases, by means of muscle and/or bone procedures, depending on the lesion balance. Results. The postoperative results were excellent in 2.4% of cases, acceptable to some extent in 93.8% and poor in 3.8%. We registered a recurrence rate of 14.8%, a postoperative morbidity rate of 6.17% with a postoperative mortality rate of 0. Treatment results could not be assessed in 129 (51.9%) cases due to lack of follow-up.

3. Definition

Cerebral palsy (CP) is a group of neurological disorders that affect movement, muscle tone, and posture, caused by abnormal brain development or damage to the developing brain.

4. Risk Factors

A number of factors are associated with an increased risk of cerebral palsy.

Maternal health

- Certain infections or toxic exposures during pregnancy
- Cytomegalovirus-If a mother has her first active infection during pregnancy, it can lead to birth defects.
- German measles, known as rubella.
- Herpes-This infection can be passed from mother to child during pregnancy, affecting the womb and placenta.
- Syphilis. This is a bacterial infection that's usually spread by sexual contact.
- Toxoplasmosis-This infection is caused by a parasite found in contaminated food, soil, and the feces of infected cats.
- Zika virus infection-This infection is spread through mosquito bites and can affect the brain development of an unborn baby.
- Intrauterine infections. This includes infections of the placenta or fetal membranes.
- Exposure to toxins

Infant illness

- Bacterial meningitis. This bacterial infection causes swelling in the membranes surrounding the brain and spinal cord.
- Viral encephalitis. This viral infection also causes swelling in the membranes surrounding the brain and spinal cord.
- Severe or untreated jaundice. Jaundice appears as a yellowing of the skin and eyes. The condition occurs when certain byproducts of "used" blood cells aren't filtered from the bloodstream.

- Bleeding into the brain. This condition is commonly caused by the baby having a stroke in the womb or in early infancy.

5. Etiology

Maternal:

- Diabetes
- Hyperthyroidism
- Exposure to radiation
- Malnutrition
- Cognitive impairment/ seizure
- Infections
- Bleeding
- Polyhydramnios
- Genetic abnormalities
- Medication used in thyroid, estrogen, progesterone

Gestational:

- Chromosome abnormalities
- Genetic syndrome
- Teratogen
- Rh incompatibility infection
- Congenital malformations
- Fetal development
- Inflammatory response

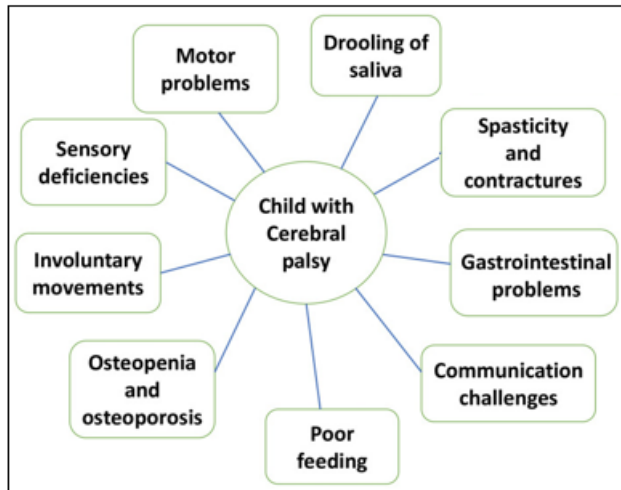
Types of Cerebral Palsy

Cerebral palsy is classified into several types based on the nature of the movement disorder:

- **Spastic CP:** Characterized by stiff and tight muscles.
- **Dyskinetic CP:** Involves uncontrolled movements and fluctuating muscle tone.
- **Ataxic CP:** Affects balance and coordination, leading to unsteady movements.
- **Mixed CP:** Features a combination of symptoms from the other types.

6. Symptoms

- Muscle stiffness or spasticity: Tight muscles that can restrict movement.
- Weakness: Difficulty in controlling muscles, leading to poor coordination.
- Movement disorders: Involuntary movements or difficulty with balance and posture.
- Other effects: Some individuals may also experience issues with vision, hearing, and speech, as well as intellectual disabilities.



7. Diagnostic Test

- History taking
- Physical examination
- Neurological examination
- Magnetic resonance imaging
- Ultrasound
- Electroencephalogram

8. Case Study of Mr. X

An 18-year-old male has been admitted to the hospital for complaints of fever, headache, vomiting, vision problems, muscle spasm, difficulty in speaking, and posture deficit for 2 weeks. He was a known case of cerebral palsy for 9 years.

9. Medical Management

- Inj. Ceftriaxone 300mg, BD
- Inj. Paracetamol 250mg sos
- Inj. Omez 20 mg OD

Non- Pharmacological Management:

- Physical therapy: To enhance mobility and strength.
- Occupational therapy: To assist with daily activities and improve fine motor skills.

Surgery:

In some cases, surgical interventions may be necessary to improve function or correct anatomical issues.

10. Nursing management

- Improve Mobility and Independence: Facilitate physical therapy and exercises to enhance motor function and prevent contractures.
- Optimize Nutrition: Address feeding difficulties and ensure adequate caloric intake for growth and development.
- Promote Effective Communication: Support communication strategies tailored to the patient's abilities and needs.
- Prevent Complications: Monitor for potential complications such as pressure sores, respiratory issues, and musculoskeletal problems.

- Provide Support and Education: Educate families and caregivers about CP, its management, and available resources

11. Nursing Diagnoses

Common nursing diagnoses for patients with cerebral palsy may include:

- Risk for Injury: Related to impaired mobility and coordination.
- Self-Care Deficit: Due to neuromuscular impairments affecting daily activities.
- Imbalanced Nutrition: Related to difficulties in feeding and swallowing.

12. Complications

- Contracture
- Malnutrition
- Mental health conditions
- Heart and lung disease
- Osteoarthritis
- Osteoporosis

13. Conclusion

Cerebral palsy is a lifelong condition that does not worsen over time, although symptoms may change as a child grows. With appropriate interventions and support, many individuals with cerebral palsy can lead fulfilling lives and achieve their personal goals.

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