



A REVIEW ON: PATHOPHYSIOLOGY, SYMPTOMS, CAUSE AND ,TREATMENT OF CEREBRAL PALSY

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Abstract:

Cerebral palsy is a common pediatric disorder occurring in about 2 to 2.5 per thousand live birth . it is a non progressive motor disability which is cause by abnormal development or damage in one or more parts of the brain that control muscle tone and motor activity . The commonest cause of cerebral palsy remains unknown in 50percent of the cases prematurity remains the commonest risk factor . The child with cerebral palsy is best cared for with and individualized treatment plan that provides a combination of interventions . mental retardation ,seizures ,breathing problem, bladder and bowel control problems ,learning disabilities ,skeleton deformities ,dental problem ,eating difficulties ,digestive problems and hearing and vision problems are also linked with this disorder . cerebral palsy was first describe in 1862 by an orthopedic surgeon named William james little .

The aim of this article is to provide an updated over view of cerebral palsy and review the most recent advance in clinical and therapeutic interventions .

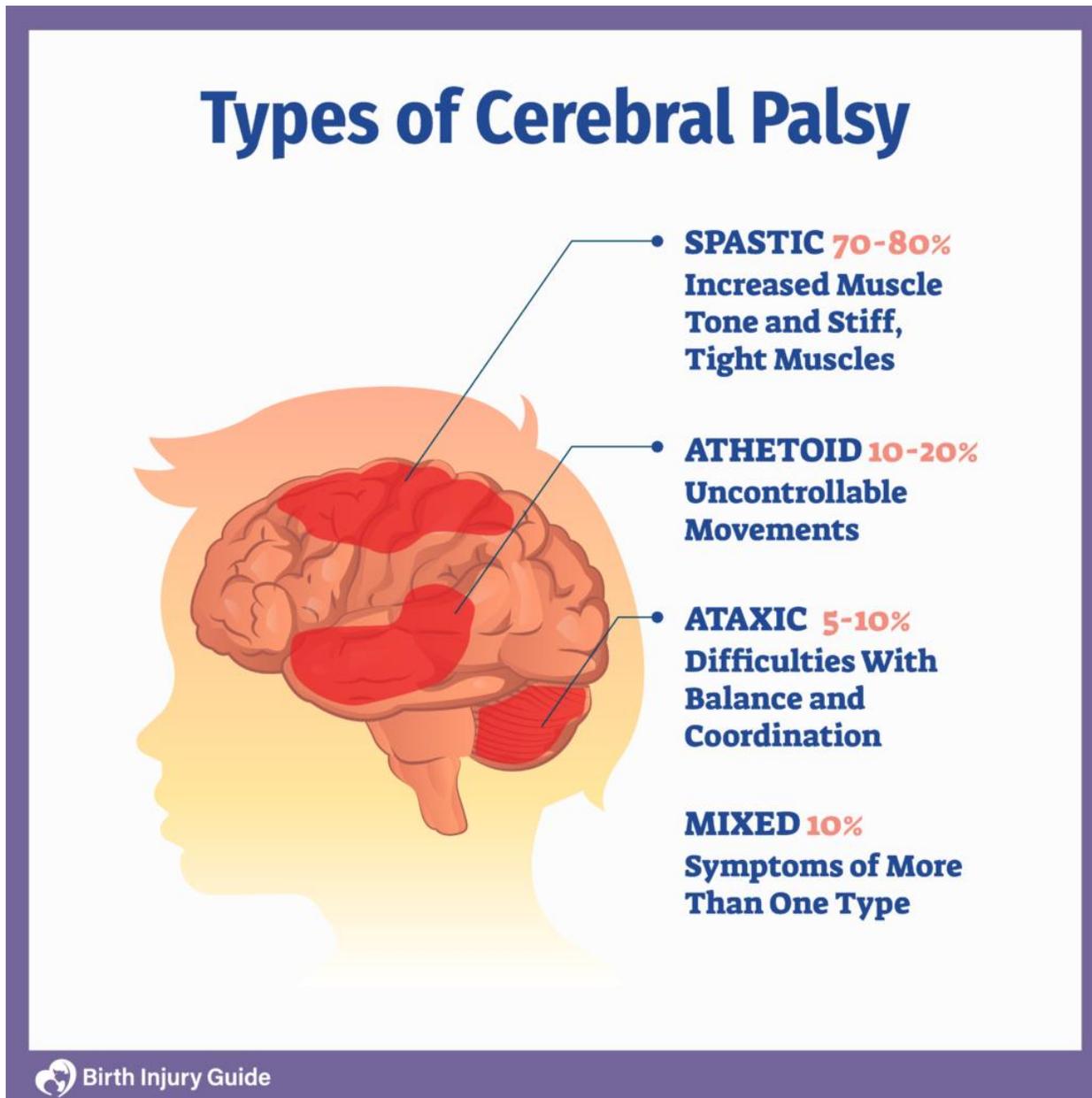
Keywords: brain damage , cerebral palsy.

INTRODUCTION:

Cerebral palsy is a disorder of movement and posture that appears during infancy or early childhood resulting from damage to the brain. it is a term we had heard a lot in recent times .there are organization all around world which offer support to patients with cerebral palsy and their caregivers the damage to the brain is permanent and cannot be cured but the earlier we start with intervention the more improvement can be made. It might appears that the number of patients suffering from cerebral palsy is increasing day by day. however a large portion of the increasing number can be attributed to the growing level of awareness on people. Cerebral palsy is a group of permanent but non unchanging , disorders of movement and posture and of motar function ,which are4 due to non progressive interference ,lesion ,or abnormalities of the developing /immature brain.

TYPES OF CEREBRAL PALSY:

Classification based on type of neurological dysfunction as:



PATHOPHYSIOLOGY:

Generally there are three distinctive features common to all patients with cerebral palsy.

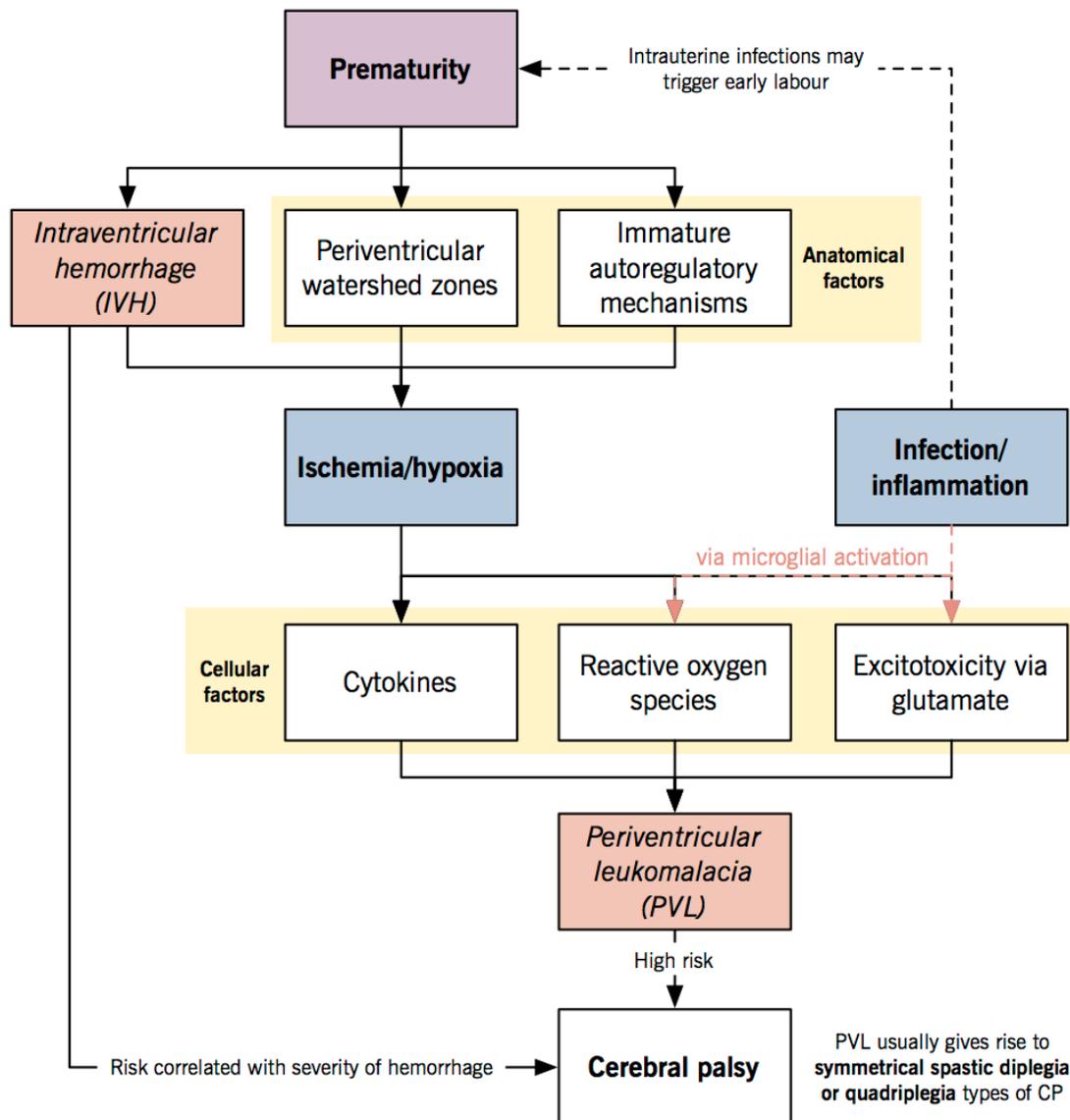
1. Motor impairment ,which distinguish it from global developmental deal or autism.
2. An initial insert to the developing brain.
3. A neurologic deficit that is non progressive.

Pathogenesis of periventricular leukomalacia (PVL)

Source: Arch Dis Child Fetal Neonatal Ed. 2008 Mar;93(2):F153-61.

Eric Wong

Prematurity is the main risk factor for CP. Preterm infants are at risk of both intraventricular hemorrhage (IVH) and periventricular leukomalacia (PVL). **Anatomical factors**, including distal arterial perfusion of watershed zones and immature vessel autoregulation, predispose the premature brain (periventricular area) to ischemia. **Cellular factors** such as cytokines, reactive oxygen species, and excitotoxicity, target the premyelinating oligodendrocytes, interfering with myelination of white matter. Together, these factors give rise to underdevelopment of the white matter in the periventricular area, known as periventricular leukomalacia.



CAUSES:

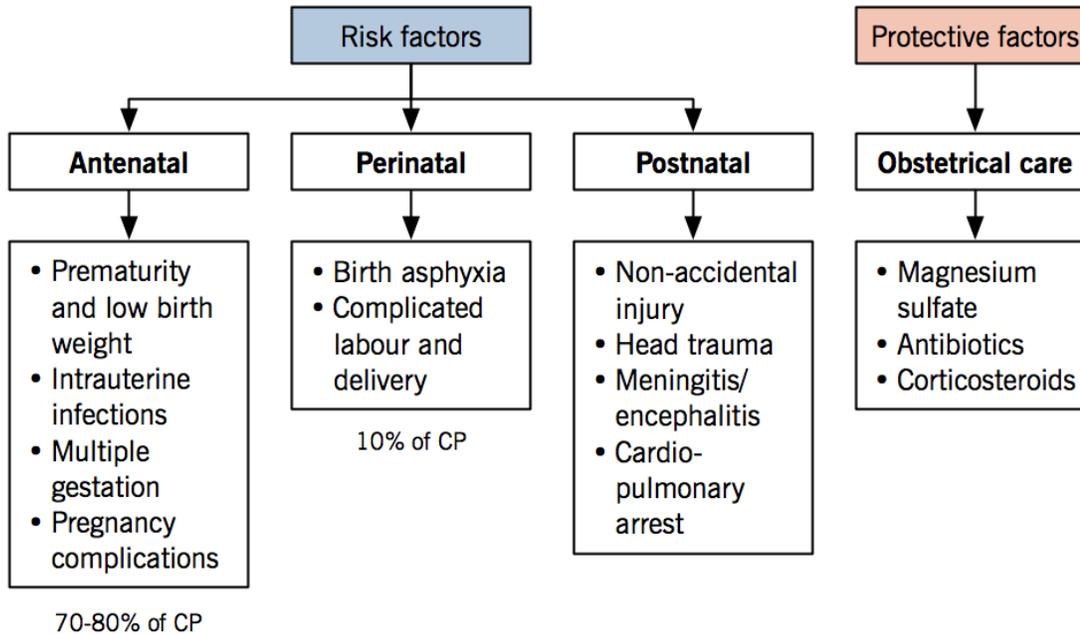
Cerebral palsy is caused by abnormal brain development or damage to the developing brain. Many factors can lead to problems with brain development:

1. Genetic abnormalities: like maternal mental retardation, fetal microcephaly, fetal congenital malformations, inherited thermobophilias.
2. Gene mutations: that results in genetic disorder in brain development
3. Maternal infections: that affect the developing fetus
4. Fetal stroke: a disruption of blood supply to the developing brain
5. Bleeding into the brain: in the womb or newborn
6. Infants infections: that cause inflammations around the brain.

7. Traumatic head injury : to an infant such as from a motor vehicle accident
8. Lack of oxygen

Risk factors for development of cerebral palsy

Risk factors can be divided by time period into antenatal, perinatal, and postnatal factors. The majority of the risk occurs in the antenatal period. Prematurity is a significant risk factor, predisposing to development of periventricular leukomalacia (PVL). Prudent obstetrical care, with management of preeclampsia (magnesium), infections (antibiotics), and preterm labour (corticosteroids), can help reduce the risk of CP.



SYMPTOMS:

Signs and symptoms of cerebral palsy can vary greatly from person to person.it can affect the whole body .

1. Movement and coordination: stiff muscles Variation in muscle tone ,stiff muscle with normal reflex, lack of balance difficulty walking difficulty with fine motor skills .
2. Speech and eating: delay in speech development difficulty speaking , difficulty in chewing or eating
3. other problems: seizures , difficulty hearing , problems with vision and abnormal eye movements bladder and bowel problems , mental health conditions.

The brain disorder causing cerebral palsy does not change with time , so the symptoms usually do not worsen with age .

TREATMENT:

Treatment can help but this condition can't be cured.

1. Medication
2. Surgery
3. Assistive devices
4. Mobility aids

1 Medication : it is use to treat some symptoms of cerebral palsy including involuntary movements, seizures and spasticity.

- Anticholinergic
- Anticonvulsants

- Antidepressants
- Anti-inflammatory
- Baclofen
- Botox
- Nerve block

2 Surgery : surgery may be recommended for children's with severe mobility and muscle issue

- Correct fix joints and tendons
- Correct foot deformities
- Correct muscle contractures
- Correct spinal curvatures
- Improve balance and coordination
- Relieve pain
- Improve posture

3 Assistive devices : it can help individuals with cerebral palsy that experience issues with communication and hearing , vision .

- Cochlear implants
- Electronic communication boards
- Eye tracking device
- Typing aids
- Writing aids

4 Mobility aids: children with mobility limitations may benefit from assistive technology that can be adjusted to their individual needs.

- Canes
- Crutches
- Lifts
- Power scooters
- Orthotic devices
- Strollers
- Walkers
- Walking sticks
- Wheel chairs

THERAPY:

- **Physical therapy**
- **Occupational therapy**
- **Speech therapy**
- **Alternative therapy**
- **Recreational therapy**

• **Physical therapy** :Helps relieve pain and muscle stiffness as well as improve ,balance ,coordination ,and overall mobility .for the first 1to2 years after birth , both physical and occupational therapist work on issues such as head and trunk control , rolling and grasping . later both types of therapist are involved in wheel chair assessments

• **Occupational therapy** : helps children with cerebral palsy learn how to complete everyday task and activities by improving fine motor skills

1. **Spastic:** muscle stiffness in the upper and lower limbs and jerky movements characterized spastic cerebral palsy . among other things , this can lead to difficulty getting dressed , bathing , using the bathroom , eating , drinking , writing and holding objects .

2. **Athetoid** : children's with athetoid cerebral palsy are unable to regulate muscle tone , which makes it difficult to control their movements . Trouble with grasping objects posture , drooling , swallowing , and speaking are common among children with athetoid cerebral palsy .
 3. **Ataxic**: problems with balance and coordination are common among children with ataxic cerebral palsy. This children often struggle with precise movements and have tremors or shakiness .this make it difficult to perform task like writing or eating that require precise finger movements ,or repetitive movements like clapping .
- **Speech therapy**: helps children to improve their communication and language skills. this type of therapy gives children the confidence to learn and socialize. speech therapy can also help children who have difficulty eating and swallowing .
 - **Alternative therapy**: helps children focus on themselves as individual and lets them overcome physical and obstacles .alternative therapy include hippo therapy,music therapy , aquatic therapy .
 - **Recreational therapy** : some children benefits from regular or adaptive recreational or competitive sports , such as therapeutic horse back riding or skiing .this type of therapy can help improve your child's motor skills , speech and emotional well being .both adults and children's benefit from regular physical activity and exercise for general health and fitness.

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