Review Article

An Overview of Cerebral Palsy in Children

Tulashi Adhikari Mishra
Associate Professor, Nursing Campus Maharajgunj, TU IOM
Correspondence: tulsikadhikari@gmail.com

ABSTRACT

Cerebral palsy is one of the leading disorders of neurological impairment in childhood, caused by damage to developing brain from congenital malformation, injuries and anoxia at any time during fetal life, birth and early year of child's life. Most of the affected children will develop symptoms in infancy or early childhood with motor impairments such as spasticity, muscle weakness and ataxia. As a result, this disorder influences not only the child's everyday functioning but also the activities of the whole family. However, proper and early management of this disorder can improve the quality of life of the child to a great extent. Health professionals including nurses can use this information in early identification, prevention and management through rehabilitation services to the child, parent and family member. The aim of this review is to highlight the cerebral palsy in childhood and several evidences was reviewed from different sources.

Keywords: Brain anoxia, Cerebral palsy, Congenital malformation

INTRODUCTION

Cerebral palsy (CP) is a common motor disability among the children. The incidence is 1.5 to 2.5 per 1,000 live births (Arneson et al; 2009) and the rate is increasing trend particularly because of the increased survival rate of premature infants (Nettina, 2012). The brain damage that leads to CP can occur before birth, during birth and early childhood while the brain is still developing**.** The prenatal cause is unknown in 70% to 80% of the cases (Krigger, 2006). Some of the known causes are infants exposed to maternal and perinatal infections prematurity and very low birth weight (Wilson & Hockenbery, 2011).

CP causes physical disability of motor functions which are often accompanied by disturbances of sensation, cognition, communication, perception, behavior and/or by seizure disorders (Smithers-Sheedy et al; 2004). Most children develop symptoms in infancy or early childhood (Kyle, 2008). It is a lifelong condition and one of the most common causes of physical disability in children (Rosenbaum, 2003).Children with severe impairment of mobility and feeding skills have a greater risk of dying during childhood. Approximately 75% have mental retardation or learning disabilities (Liptak & Accardo, 2004).

CLASSIFICATION

Dyskinetic (athetoid) palsy characterized by an injury in the basal ganglia and slow uncontrolled involuntary movement involving all extremities.

Spastic CP is most common type, where cortex is the affected area characterized by increased deep tendon reflexes, flexion and hypertonia.

Ataxic CP, the affected area of the brain is cerebellum, characterized by a loss of co-ordination and equilibrium.

Mixed type, both spastic and dyskinetic signs are present with usually the total body involvement.

Several epidemiology and Etiologies revealed that infection during pregnancy such as chorioamnioniits, maternal sepsis, temperature $>38^0$ C have been associated with a significant increase in the risk of CP in normal birth weight infants. About two-fifth (39.5%) mothers have reported an infection during the pregnancy and 19% having evidence of urinary tract infection (Behrman, 2012). Many of the neurological conditions associated with preterm delivery and who have an increased risk of infection with various co-morbidities and often several disabilities (Hafstrom et. Al; 2018). One recent study

found that prematurity, when combined with low birth weight and preeclampsia with the mother, is 20-fold increased risk of cerebral palsy in the child (Bass, 2019). Fewer than 10% of children with CP had evidence of intrapartum asphyxia (Behrman, 2012).

CASE IDENTIFICATION

Cerebral Palsy can be evident from motor disability in the first 12-18 months depending on the severity with delayed in meeting developmental milestone including visual defects such as strabismus, nystagmus, hearing loss, language delay and seizures. Feeding may be difficult because of oral motor involvement (Ball & Binder, 2009).Additional tests such as magnetic resonance imaging (MRI) and electroencephalogram (EEG) may be done to look for abnormalities in the brain. There is very little data relating to cerebral palsy (CP) in Nepal. One of the retrospective study found that majority of the cases (56 %) were diagnosed within the age of 4 years (Thapa, 2016).

PREVENTIVE MEASURES

Pre-conception: Potential mothers should be educated to be as healthy, treat any infections promptly and health conditions should be kept in control. Vaccination against chickenpox and rubella should be carried out which harms a developing baby.

During Pregnancy and birth: Early and regular antenatal checkup, hand hygiene, screening of blood type or Rh incompatibility and its treatment with Rh immune globulin prevents severe jaundice and kernicterus. Mother should be instructed to take right amount of food, release stress, control non-communicable diseases (DM, smoking etc) to reduce the risk for preterm delivery and prolonged labor and birth asphyxia should be manage promptly.

After Childbirth: Mother should be taught healthy baby care; jaundice should be treated promptly to prevent from severe jaundice and kernicterus. Child should be vaccinated against meningitis and encephalitis. Later on, parents should be taught about accident and injury prevention such as not to leave the young child unsupervised, not to hit, throw, shake, or hurt the child as these actions may injure the child's brain.

Further Management such as physical, occupational therapy supportive treatments, medications and surgery can help the child to improve their disability and better to manage with speech therapy (National Institute of Neurological Disorder and Stroke. The holistic approach is required to achieve fullest possible developmental age (NINDS 2015).

CONCLUSION

The review concludes that Cerebral palsy is the most common motor disability of children which is caused by prenatal, perinatal and postnatal factors. Commonest risk factors are prematurity and low birth weight. Early diagnosis and timely initiation of appropriate management can reduce the incidence of neurological, psychosocial and emotional handicaps of the child.

REFERENCES

Arneson, C.L., Durkin, M. S., Benedict, R. E., Kirby, R. S., Yeargin-Allsopp, M., Van Naarden Braun K. & Doernberg, N. S. (2009). Prevalence of cerebral palsy: Autism and Developmental Disabilities Monitoring Network, three sites, United States, 2004. *Disability and Health Journal 2*(1):45-48.

Ball, J.W. & Bindler, R. C. (2008).*Pediatric nursing, caring for children*. (4thed.). New Delhi: India: Pearson Education.

Bass, P. (2019). *Premature birth and cerebral palsy*. Available at: -https://www.cerebralpalsyguidance.com/cerebral-palsy/risk-factors/premature-birth/

Behrman, R. E., Kliegman R.M., Stanton, B. F., Schor N. F. & St. Geme. (2012). *Nelson's Textbook of Paediatrics* (19thed.). Philadelphia: Elsevier. Saunders.

Hafström ,M., Källén, K., Serenius, F., Maršál, K., Rehn, E., Drake, H. Strömberg, B. (2018). Cerebral palsy in extremely preterm infants**.** *Journal of the American Academy of Pediatrics. 141* (1) e20171433; DOI: https://doi.org/10.1542/peds.2017-1433 Available

at; https://pediatrics.aappublications.org/content/141/1/e20171433

Krigger, KW. (2006). Cerebral Palsy: an overview. *American Family Physician*, *73* (1); 91-100.

Kyle, T., (2008).*Essentials of pediatric nursing*. Philadelphia: Lippincott.

Liptak, G. S. &Accardo, P. J. (2004). Health and social outcomes of children with cerebral palsy. *Journal of Pediatrics, 145:* 36 -41.

National Institute of Neurological Disorders and Stroke [NINDS] (2015). Cerebral palsy: Hope through research. Retrieved from http://www.ninds.nih.gov/disorders/cerebral_palsy/cerebral_palsy.htm.

Nettina, S.M (2012). *Lippincott manual of nursing practice.*(9thed.). New Delhi, India: Walters Kluwer Health/ Lippincott Williams & Wilkins.

Rosenbaum,P(2003). Cerebral Palsy: What Parents and doctors want to Know. *British Medical Jouranl*, 326, 970-974.

Smithers-Sheedy, H., Badawi, N., Blair, E., Cans, C., Himmelmann, K., Krägeloh-Mann, I. & Wilson, M.(2014). What constitutes cerebral palsy in the twenty-first century? *Developmental Medicine and Child Neurology, 56(*4); 323–328 pmid:24111874

Thapa, R. (2016). Retrospective descriptive study of cerebral palsy in Nepal. *Journal of Autism and Developmental Disorders, 46*(7); 2285-2291.

Wilson, D&Hockenbery,M.J(2011). *Nursing Care of Infants and Children*.(9thed.). ELSEVIER MOSBY. Pp1691-1692.