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Original Research Article

Study of Clinical and Etiological Profile of Cerebral Palsy in Children of North Karnataka

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Conflict of interest: Nil

Abstract:

Background: Cerebral palsy (CP) is a disorder characterised by abnormal muscle tone, posture, and movement. Clinically classified as the predominant motor syndrome. Spastic hemiplegia, spastic diplegia, spastic quadriplegia, and extrapyramidal or dyskinetic As CP is associated with multiple secondary medical conditions, a meticulous diagnostic approach is required by the clinician.

Method: The severity and aetiology of CP were studied in 80 (eighty) children under the age of 18. Vision, hearing assessment, and neuroimaging (CT / MRI) was performed.

Results: The etiological factors were 39 (48.7%) birth asphyxia, 16 (20%) CNS infection, 14 (17.5%) bilirubin encephalopathy, 11 (13.7%) hypoglycemia, The co-morbidities included 64 (80%) speech problems, 44 (55%) seizures, 37 (46.2%) feeding problems, and 16 (20%) contractures and deformities. The types of CP were 52 (65%) spastic, 12 (15%) ataxic, 8 (10%) dyskinetic, 8 (10%) mixed, 55 (68.7%) quadriplegic, 19 (23.7%) diplegic, and 6 (7.5%) hemiplegics.

Conclusion: Prematurity and low birth weight are important risk factors for children who develop CP. About half of all children who develop CP were born at term at normal birth weight with no identified risk factors. The exact aetiology of CP is yet to be known. 1 scale and mean AEC values for the research population were 60.07 and 15.71, respectively.

Keywords: Cerebral, Palsy Seizures, Encephalopathy, Co-Morbidities, Aetiology.

Introduction

Cerebral palsy (CP) is primarily a neuromotor disorder that affects the development of movements, muscle tone, and posture[1]. The underlying cause is an injury to the developing brain in the prenatal and neonatal periods. Although the initial neuropathologic lesion is non-progressive, children with CP may develop a range of secondary conditions over time that will variably affect their functional abilities.

CP describes a group of permanent disorders of movement and posture causing activity limitations that are attributed to non-progressive disturbances that occurred in the developing foetal or immature brain. The motor disorders of CP are often accompanied by disturbances of sensation, perception, cognition, communication, and behaviour caused by epilepsy and secondary muscle and skeletal problems[2]. CP is characterised by heterogeneity in risk factors underlying specific aetiologies, clinical features, severity of functional limitations associated with secondary conditions, treatment options, and evaluation of the condition over the life span of the individual. It is reported that, CP is a spectrum of disorders rather than a discrete unitary clinical condition[3].

The prevalence of CP for all live births ranges from 1.5 to 3 per 1000 live births, with variation between high-income and low- to middle-income countries and geographic regions. Because in many infants and children abnormal neuro-motor findings tend to resolve within the first few years, especially during the first 2–5 years of life, there is a higher prevalence of CP observed during infancy than in children[4]. The most common causes of postnatal CP are traumatic brain injuries. It is important to evaluate the aetiology and types of palsy in different age groups of children.

Material and Method

80 (eighty) children having cerebral palsy visited ESIC medical college and hospital in Gulbarga, Karnataka-585102 were studied.

Inclusive Criteria: Children below 18 years with cerebral palsy in physical medicine and rehabilitation (PMR) OPD are either referred by the local clinicians. Their parents or guardians have given written consent and have been selected for study.

Exclusion Criteria: Children above 18 years, children with non-central motor deficits, and children with progressive neurological disorders were excluded from the study.

Methods: Every child presenting with a neurodevelopmental delay was evaluated. The possible aetiology and assessment of various co-morbidities were recorded through vision and hearing assessments, and neuroimaging (CT scan or MRI) was carried out to study palsy. Moreover, routine blood examinations CBC were carried out to study the baseline clinical features. The cases were classified based on a modified Swedish classification[5].

The duration of the study was April 2020 to March 2023.

Statistical analysis: Various aetiologies, co-morbidities, types of CP, and types of spastic CP were classified by percentage. The statistical analysis was carried out in SPSS software. The ratio of male and female children was 2:1.

Observation and Results

Table 1: Aetiology Factors of Cerebral Palsy

Parameter	No. of patients 80 (eighty)	Percentage
Birth asphyxia	39	48.7
CNS infection	16	20
Bilirubin encephalopathy	14	17.5
Hypoglycaemia	11	13.7

39 (48.7%) cases of birth asphyxia, 16 (20%) cases of CNS infection, and 14 (17.5%) cases of hypoglycaemia

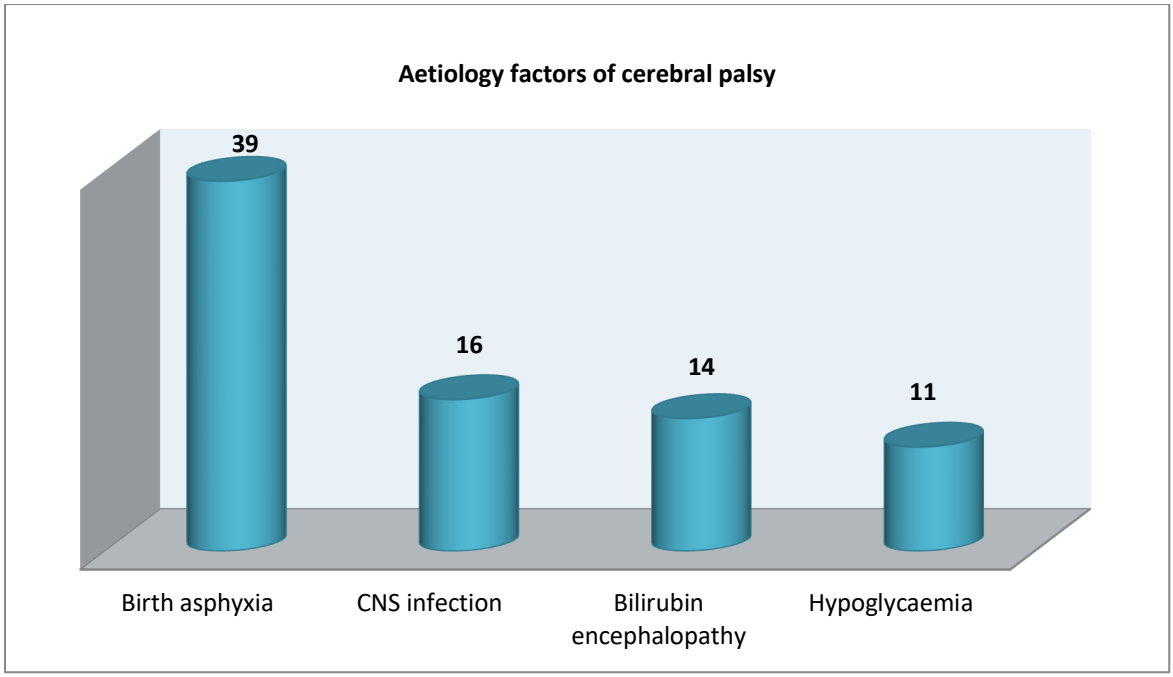

Figure 1: Aetiology Factors of Cerebral Palsy

Table 2: Co-morbidities associated with cerebral palsy

Parameter	No. of Patients (80)	Percentage
Speech problems	64	80
Seizures	44	55
Feeding Problems	37	46.2
Contractures and deformities	16	20

64 (80%) speech problems, 44 (55%) seizures, 37 (46.2%) feeding problems, and 16 (20%) contractures and deformities

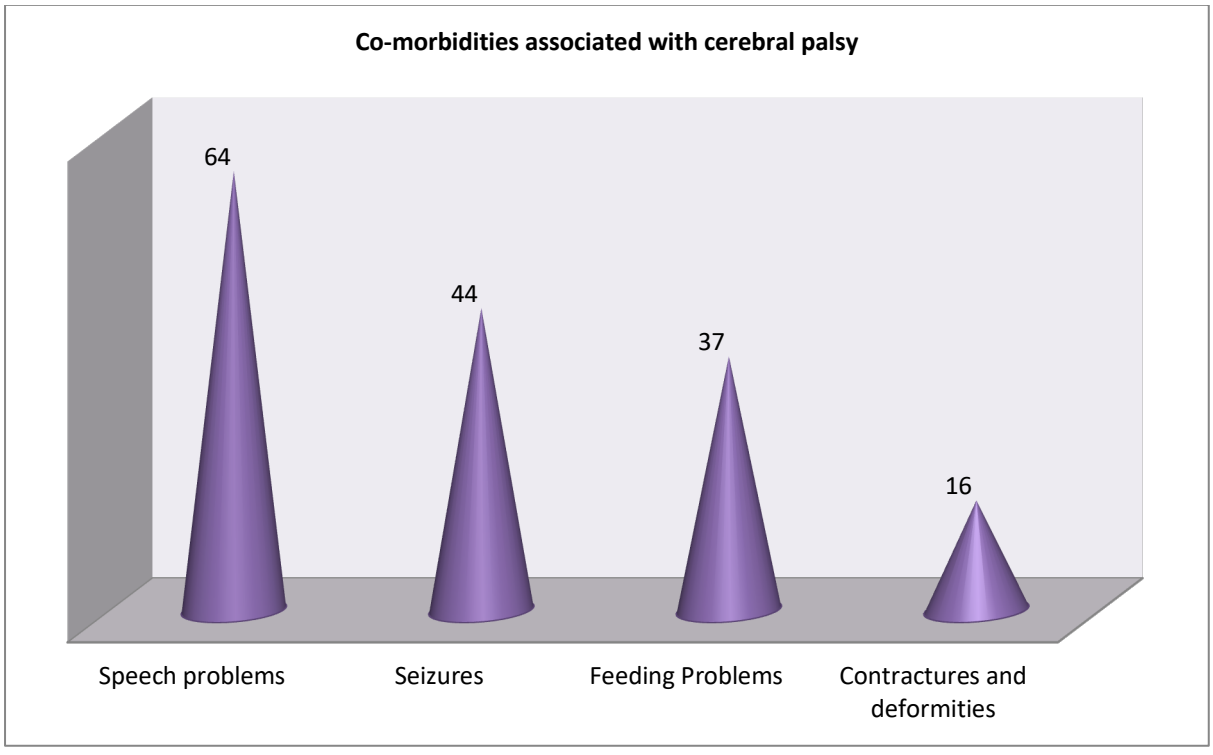

Figure 2: Co-morbidities associated with cerebral palsy

Table 3: Study of Types of Cerebral Palsy

Types of palsy	No. of patients	Percentage
Spastic type	52	65
Ataxic	12	15
Dyskinetic	8	10
Mixed	8	10

52 (63%) spastic types, 12 (15%) ataxic, 8 (10%) dyskinetic, and 8 (10%) mixed

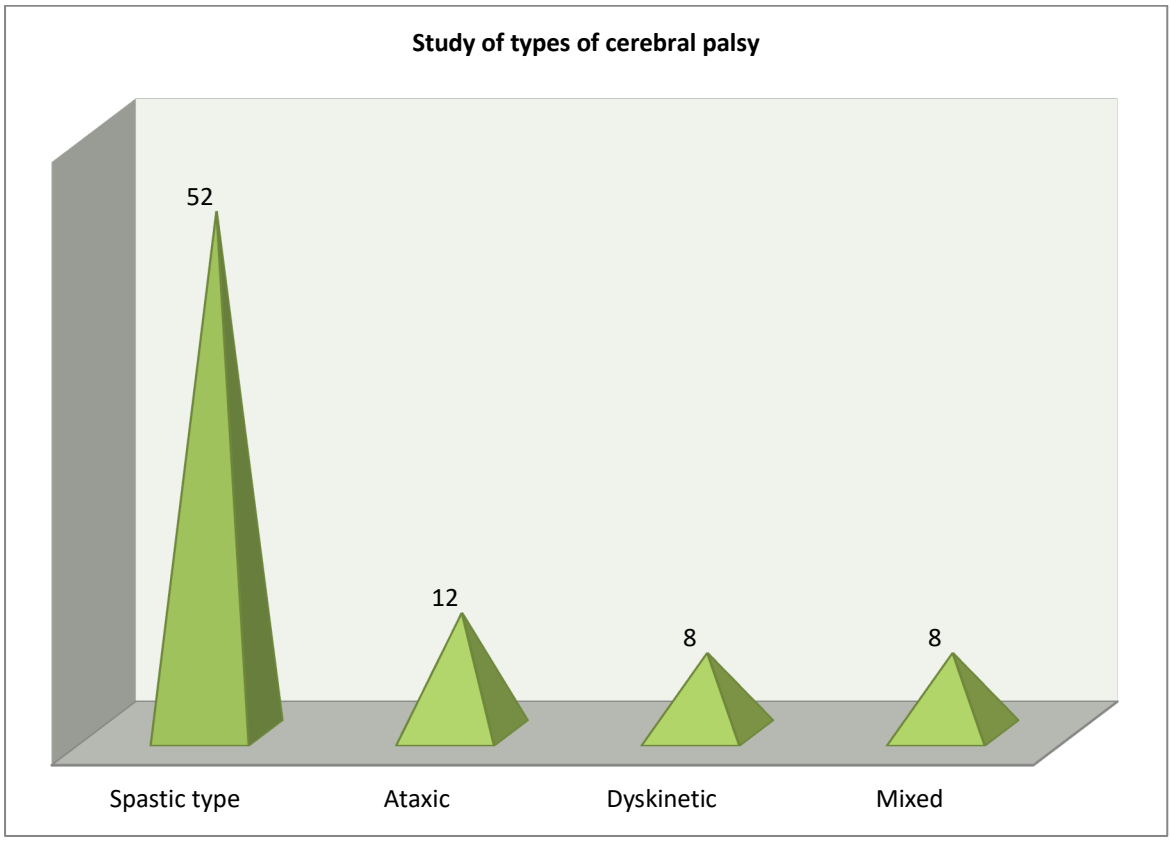

Table 3: Study of Types of Cerebral Palsy

Table 4: Types of spastic cerebral paralysis

Spastic palsy	No. of patients	Percentage
Quadriplegia	55	68.7
Diplegia	19	23.7
Hemiplegia	6	7.5

Table 4 show types of spastic cerebral paralysis: 55 (68.7%) quadriplegia, 6 (7.5%) hemiplegia

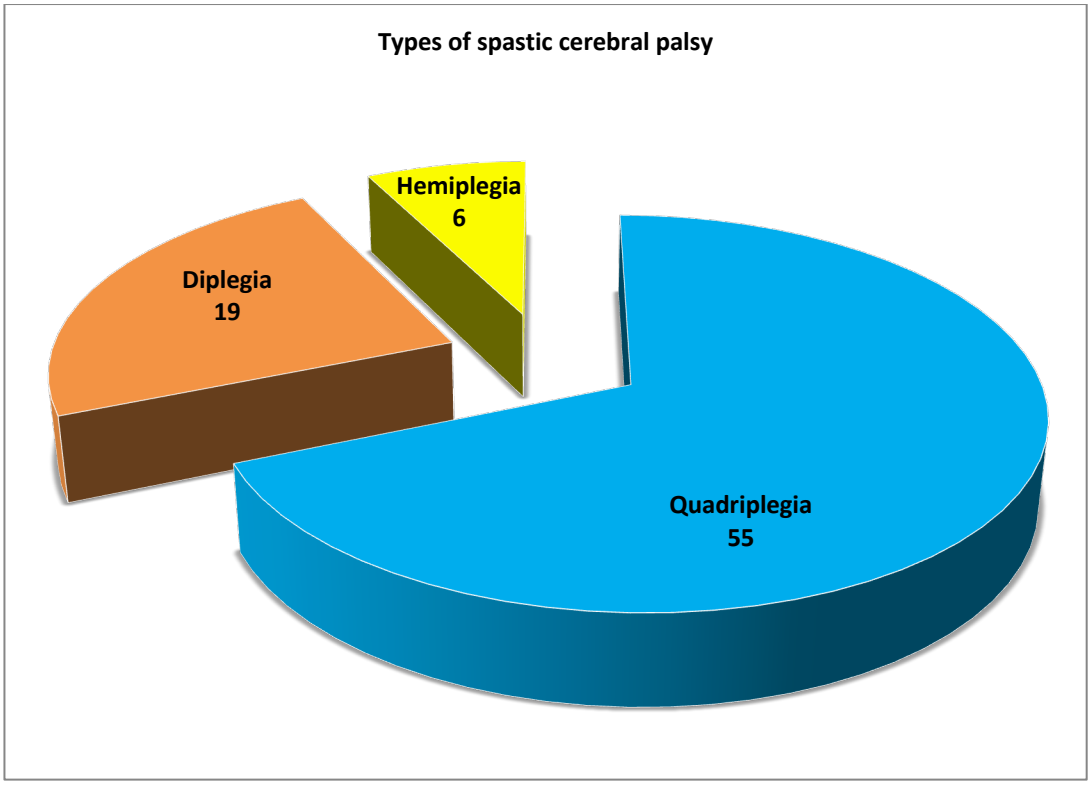

Figure 4: Types of spastic cerebral paralysis

Discussion

Present study of the clinical and etiological profile of cerebral palsy in children of north Karnataka. The etiological factors were 39 (48.7%) birth asphyxia, 16 (20%) CNS infections, 14 (17.5%) bilirubin encephalopathy, and 11 (13.7%) hypoglycaemic (Table-1). The co-morbidities were 64 (80%) speech problems, 44 (55%) seizures, 57 (46%) feeding problems, and 16 (20%) contractures and deformities (Table-2). The types of cerebral palsy were 52 (65%) spastic, 12 (15%) ataxic, 8 (10%) dyskinetic, and 8 (10%) mixed (Table-3). The types of spastic cerebral palsy were 55 (68.7%) quadriplegia, 19 (23.7%) diplegia, and 6 (7.5%) hemiplegia (Table-4). These findings were more or less in agreement with previous studies[6-8].

CP is reported to have various prevalence rates and clinical patterns between geographical areas. This may be because of etiological factors. The cause of CP might be due to the low quality of health care facilities and the survival of premature and low-birth-weight babies[9]. It is also suggested that the illiteracy of parents and low-middle class status of patients have contributed to the development of children with CP disease[10]. The nutrition status of pregnant mothers will have a greater impact on the health status of children; such children would be more susceptible to CP; marital conflicts, stressful lives of parents, occupation, and standard of living are also causative factors for CP in children[11].

Further exploration of the causes of cerebral palsy is likely to add more information. Research on risk factors and causes of cerebral palsy will likely promote the development of preventive strategies for CP. Proper nutrition, positive mental status of the mother, and intensive neonatal care units may prevent CP in children.

Summary and Conclusion

CP is the most common cause of motor abnormalities seen in infants and children. The incidence of CP has remained steady over the past several decades. Although prematurity and low birth weight are

important risk factors, about half of all children who develop CP are born at term with normal birth weight and have no identified risk factors. A specific underlying aetiology can be identified only in a very small percentage of cases. The diagnosis of CP is based mainly on findings from history and physical examination; most children with CP live to be adults. The presence of CP in children demands pathophysiological, embryological, genetic, environmental, and nutritional studies because the exact pathogenesis of CP is still unclear.

Limitation of Study: Owing to the tertiary location of the research centre, the small number of patients, and the lack of the latest technologies, we have limited findings and results.

- This research was approved by Ethical committee of ESIC Medical College and Hospital, Gulbarga, Karnataka, 585102.
- There is no conflict of interest.
- Self-Funding

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