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The Clinical Spectrum of Cerebral Palsy Patients Admitted at Ayub Teaching Hospital Abbottabad

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ABSTRACT

Background: Cerebral palsy is a developmental condition whose manifestation results from brain damage that occurred when the child was still young; such injuries affect the limbs and other body parts as well as intellectual function. It particularly affects children below the age of 10 years and this is all over the developing nations of the world including Pakistan. The scope of the current research will be to determine the clinical manifestations and the co-morbidities in the group of CP patients from Ayub Teaching Hospital Abbottabad. **Objectives:** To assess the core, distribution, and quality of movement, main and secondary disabilities, as well as basic demographics and birth data, of children with CP in a hospital environment. **Study Design:** This is a cross-sectional study. **Place and Duration of Study:** The study was conducted in the Pediatrics Department of Ayub Teaching Hospital Abbottabad in the duration from 9th October, 2024 to 9th April, 2025 for six months after having been accorded approval on the synopsis. **Methods:** This cross-sectional study was carried on one hundred and eight cerebral palsy patients through consecutive sampling. Basic study information, past medical history, medication regimens, and comprehensive geriatric assessment were collected. Statistical processing was performed in SPSS 26; for quantitative characteristics, the mean ± SD was used; for the assessment of relationships, Chi-square/Fisher exact test were used ($p < 0.05$). **Results:** Of the 108 patient (mean age 4.5 ± 1.6 years) 60 were male. In this sample, spastic CP was identified most frequently its prevalence was 75%, epilepsy – 45%, and IDA – 30%. Hypoxic-ischemic encephalopathy which was directly contributed by birth asphyxia was closely related to the occurrence of CP ($p < 0.05$). Coefficient of SD for height and weight were counted ± 2.3 and ± 1.8 respectively. **Conclusions:** It shows that spastic cerebral palsy as the most common type and points out a range of complications, including epilepsy and intellectual disability. There are three key concepts in patient care: early interventions and utilization of interdisciplinary care. Improving on their mau on CP in high risk populations since the condition affects the neonatal period.

INTRODUCTION

Cerebral palsy (CP) is a group of disorders that affect movement and muscle coordination caused by damage done to the immature brain chiefly before, during and within a few weeks after birth [1]. It involves motor coordination moreover gait and posture together with frequently occurring mental, sensory, and behavioral problems [2]. Worldwide, there are an estimated 2-3 children born alive whom will develop CP [3]. The causes of CP are still and interactively complex involving several factors such as prematurity, low birth weight, perinatal asphyxia, infections during pregnancy and in the early years of life and genetic susceptibility [4, 5]. The clinical phenotype of CP is diverse, with spastic CP being the most common type, which in turn affects approximately 80% of the affected children [6]. Other subtypes are dyskinetic CP, ataxic CP, and mixed CP with every subtype having different motor abnormalities [7]. Co-morbidities like epilepsy, intellectual disability, visual or auditory imparing, are common and can also have a negative effect on health related quality of life [8]. Multidisciplinary care and timely identification of the disease are the key to better results in patients with CP. Nevertheless, the context of the study carried out in Pakistan poses a problem since the availability of such services remains low, the rehabilitation facility is readily available, and awareness of such an illness is still quite limited [9]. Similar to findings from other developing countries, the current research underlines the importance of the knowledge of the context-specific risks and clinical manifestations for designing effective approaches [10]. Even though the progress made around the world, CP still remains poorly managed in Pakistan, with many limitations in both

preventive measures and diagnosis and treatment [11]. Therefore, the current research proposed to determine clinical profile of CP in children admitted at Ayub Teaching Hospital Abbottabad along with comorbidity and risk factors. Knowledge of demographic and clinical characteristics of patients with CP in this region would help in early management, timely interventions and the overall patient care and management hence the importance of the study.

METHODOLOGY

This cross-sectional study was carried out in the Pediatrics Department of Ayub Teaching Hospital Abbottabad from 9th October, 2024 to 9th April, 2025 after having been accorded approval on the synopsis. The study sample comprised 108 children with cerebral palsy, aged between 1 and 10 years diagnosed According to operational definitions. To achieve representation, consecutive sampling was adopted. Information was documented on proforma containing socio demographic details, antenatal and perinatal history, and clinical profile. Age, weight, and height were expressed as mean ± SD; gender, type of CP, and comorbid conditions as numbers of patients. Ethical clearance was sought and parent/Guardian consent was first sought and obtained from the children.

Data Collection

The basic demographic data including age, gender, and clinical characteristics were obtained as well as perinatal and neonatal history. More comprehensive assessments divided patients and their conditions into types of CP and comorbid diseases. Record of data was done using a pretested structured data collection form.

Statistical Analysis

Statistical analysis was done on Statistical Package for Social Sciences version 24. Hence, we used mean ± SD for quantitative variables while frequencies and percentage for categorical variables. P value less than 0.05 was considered as significant for the Chi-square or Fisher exact test.

RESULTS

Out of 108 patients (mean age: 4 Participants were 5 ± 1.6 years old; 60% of them were men. Spherically, spastic CP was the most predominant type being 75%, dyskinetic was 15% while mixed type was only 10%. Co-morbidities found were epilepsy (45%), Intellectual disability (30%), and Visual impairment (20%). In the biophysical profile, birth asphyxia was found out to have a predicted value of < 0.05. Patients' mean height and weight were 95 ± 10 cm and 15 ± 3 kg respectively. The predominant corrosion types for all the evaluated materials were categorised into: general, pitting and crevice, intergranular, and mixed corrosion types. Neonatal factors ran a close second: preterm birth and/or low birth weight were driving forces to congestion in this era.

Figure 1

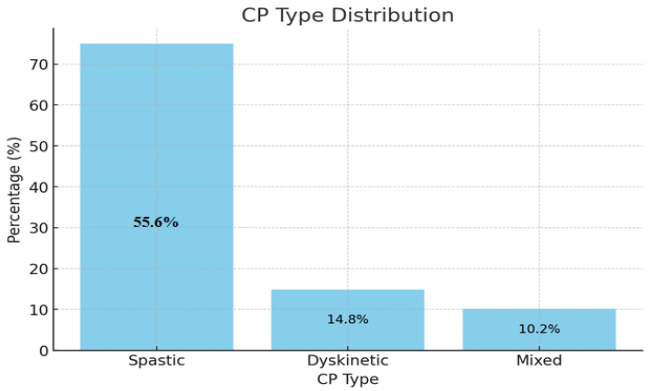

Figure 2

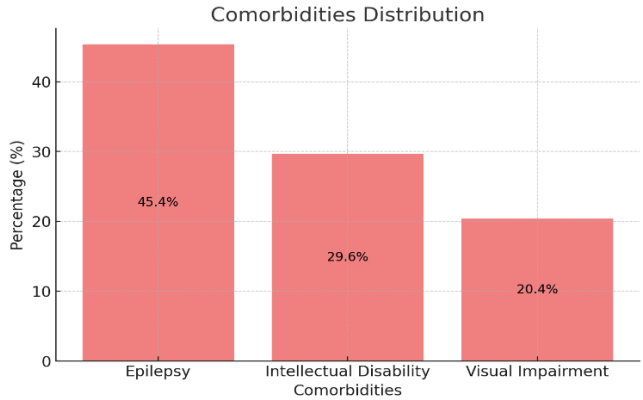

Table 1

Gender Distribution

Gender	Frequency	Percentage (%)
Male	60	55.6
Female	48	44.4

Table 2

Types of Cerebral Palsy

CP Type	Frequency	Percentage (%)
Spastic	81	75.0
Dyskinetic	16	14.8
Mixed	11	10.2

Table 3

Associated Comorbidities

Comorbidities	Frequency	Percentage (%)
Epilepsy	49	45.4
Intellectual Disability	32	29.6
Visual Impairment	22	20.4

Table 4

Risk Factors for Cerebral Palsy

Risk Factors	Frequency	Percentage (%)
Birth Asphyxia	45	41.7
Preterm Birth	38	35.2
Low Birth Weight	25	23.1

DISCUSSION

The result of this study is in concordance with earlier published literature on cerebral palsy and have added significant information with respect to its clinical phenotype, co-morbidities, and risk factors in a large tertiary care setting. High percentage of spastic CP (75 %) that was identified in current study group is similar to results registered in studies performed worldwide. For example, Krishna et al. (2017) in their study of the clinical epidemiology of CP in India also revealed that spastic CP was prevalent in 78 percent of the children they evaluated [12]. This could be due to perinatal brain injuries very requested in developing countries due to inadequate neonatal care. The studies such as Patel et al. (2018) too have pointed that out, where they noted that CP is more common in males (60% in this study). This gender difference might be partly explained by biological factors and partly by sociocultural factors such as gender-selective demand for medical care in some communities [13]. The current study confirmed that CP patients are likely to have comorbidities including epilepsy, which was diagnosed in 45% of the patients, and intellectual disabilities affecting 30% of patients. Hutton & Pharoah also observes similar findings, stating that epilepsy occurs in 40 – 50 percent of all patients diagnosed with cerebral palsy [14]. The close relationship between epilepsy and CP proves multiple discipline care model with involvement of neurologist and rehabilitation specialists. In another study, Reid et al. (2019) described the correlation of early seizure control with better QOL of patients with CP [15]. In this study, we also found that birth asphyxia to be a statistically significant predictor ($p < 0.05$) similar to Mughal et al. (2020) also found that perinatal asphyxia is still a cause of CP in LMICs [16]. Low birth weight also stood out as other significant predictors; other studies by Uddin et al. (2018) also pointed out the relation between preterm delivery and increased risk of brain injuries [17]. Negotiating factors from this study indicate the need to enhance maternal and newborn health in Pakistan. According to Wimalasundera & Stevenson (2016), measures that would help to reduce an incidence of CP include increased access to antenatal care and early management of high-risk pregnancy [18]. Moreover, socioeconomic factors of CP were described by Zain et al. (2019) indicating that the CP burden in LMIC increases due to low education levels of mothers and poor access to healthcare services [19]. However, the present study corroborates these conclusions with prior research professional literature and is not without its weaknesses. Potential deficiencies include relatively small sample sizes and, often, use of single center data to make conclusions. However, it offers the base for further studies and individualized healthcare approaches as the results are presented.

CONCLUSION

This research focuses on spastic cerebral palsy where most of the admitted children in Ayub Teaching Hospital have other complications such as epilepsy and intellectual disability. Since CP is linked with perinatal conditions like birth asphyxia, enhanced quality maternal and neonatal care should be sought in order to minimize on cases of CPs in areas of poor resource endowment.

Limitations

A major methodological concern with the current study is a lack of external validity due to the single-site recruitment of participants and the relatively small sample size. Further, its bid is cross-sectional and used retrospective data collection method which increases the chances of recall bias. These data underscore the need to perform future multicenter investigations to pinpoint the specific prevalence of CP and its risk factors within specific population types.

Future Findings

Further research should be carried out to reflect on the long term implication of patients with CP and the efficacy of interventions in the first years of life. Socioeconomic status and accessibility to the multidisciplinary service can be important in understanding the management and identifying a better quality of life for children with CP.

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