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Original Research Article

Cerebral palsy: comorbidities, the second hidden side

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ABSTRACT

Background: Cerebral palsy (CP) is the most common group of permanent disorders of motor impairment resulting from injury in the developing brain which are accompanied by comorbidities. Moreover, it has been observed that because of physical disabilities, the underlying comorbidities are neglected. The study aimed to assess the co-morbidities in children suffering from cerebral palsy in Kolhapur district.
Methods: The cross-sectional study was conducted among children suffering from cerebral palsy and presenting to Department of Paediatrics (n=250), D. Y. Patil Medical College, between October 2018 to October 2019. Detailed history with clinical examination were recorded in a pre-designed performa. The patients were classified according to the physiological and topographical classification. Data was analyzed using R software version 3.6.1. Variables were represented using frequency distribution, ($p<0.05$).
Results: Of the total participants (n=250), male predominance was observed (n=140); with age range of 1-18 years. Common form of cerebral palsy was spastic type (n=140; 56%). Most common type among spastic CP was diplegia (n=96; 38%). Children were suffering from speech abnormality in spastic CP cases (n=65). Among spastic hemiplegic cases all the children were suffering from intellectual disability (n=3).
Conclusion: Thus, it can be concluded that the motor impairment in just the top notch, the actual disability is the underlying co morbidities.

Keywords: Cerebral palsy, Hemiplegia, Intellectual disability, Motor disorders

INTRODUCTION

Cerebral palsy (CP) is the common motor disability of childhood. CP has been defined as a group of permanent disorders affecting movement and posture, causing limitations in activity due to nonprogressive disturbances that affects the developing fetal or immature infant brain; and it is a resultant of non-progressive injury to the developing brain.[1,2] Various studies conducted worldwide reported the prevalence of 1.5 to >4 per 1000 live births.[3,4] In India, prevalence of CP was estimated to be 2.95 per 1000 live births.[5] The risk factors associated with CP are prenatal, perinatal, and neonatal factors. Perinatal asphyxia has been recognized as a cause of CP in developing countries.[6]

The physiological classification of CP classifies patients into spastic, dyskinetic, hypotonic, and mixed types based on major motor abnormality while topographical classification divides them into monoplegia, diplegia, triplegia, quadriplegia, paraplegia, and hemiplegia, indicating involved extremities.[7,8]

It has been observed that the subtypes, severity of CP, and proportion of patients with associated impairments; differs between studies, and the cause of this variation is likely to be due to differences in the diagnostic criteria and classification used.[9,10] In addition to that, the associated co-morbidities in children with CP adversely affects the quality of life.

Thus, the present study was conducted to identify the comorbidities of CP cases in Kolhapur district.

METHODS

The cross-sectional study was conducted among children suffering from cerebral palsy and presenting to Department of Pediatrics (n=250), D. Y. Patil Medical College, between October 2018 to October 2019. Prior permission was obtained from the Institutional Ethics Committee. Written informed assent/consent was obtained from the parents.

Children in age group of 1-18 years were included in the study.

The detailed history with clinical examination were recorded in a pre-designed performa (data not presented). The relevant radiological investigations were undertaken. The patients were classified according to the physiological classification into spastic (increased tone), and hypotonic (decreased tone).

The patients were again classified according to topographical classification, into diplegia (4 limbs involved, lower limb >upper Limb), triplegia (3 limbs involved), quadriplegia (4 limbs involved), and hemiplegia (upper and lower limb of one side).

The impairments associated with CP have been assessed from the available formal documents including cognitive assessment, visual acuity, hearing, and evaluation.

Statistical analysis

Data was analyzed using R software version 3.6.1. Variables were represented using frequency distribution. $p<0.05$ was considered significant.

RESULTS

Of the total participants (n=250), male predominance was observed (n=140); with age range of 1-18 years. Most common form of CP was spastic type (n=140; 56%), followed by hypotonic type (n=110;44%). The most common type among spastic CP was diplegia (n=96; 38%) (Table 1).

Table 1: Different types of spastic cases.

Spastic CP	n	Percentage (%)
Diplegia	96	38%
Hemiplegia	2	4%
Triplegia	1	2%
Hemiparesis	1	2%
Quadriplegia	2	4%

Maximum number of children were suffering from speech abnormality in spastic CP cases (n=65) (Figure 1).

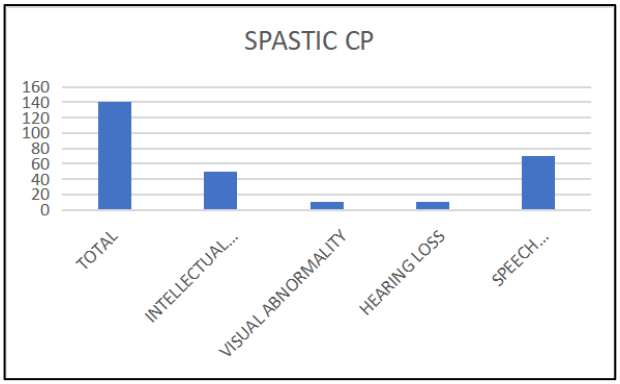

Figure 1: Types of spastic CP.

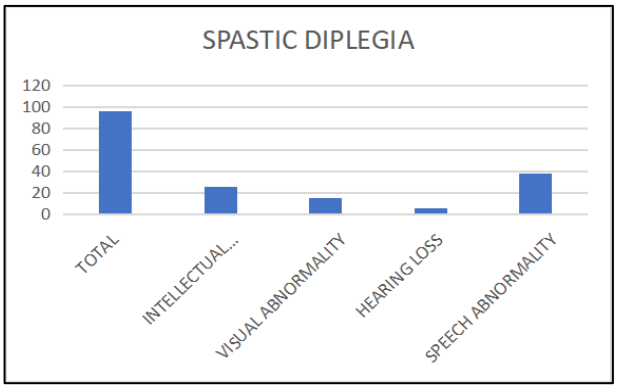

Figure 2: Types of spastic diplegia.

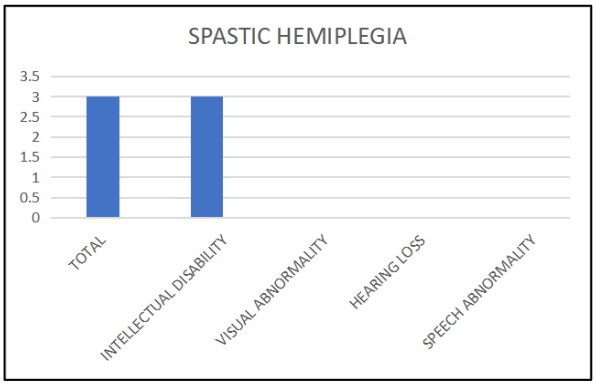

Figure 3: Types of spastic hemiplegia.

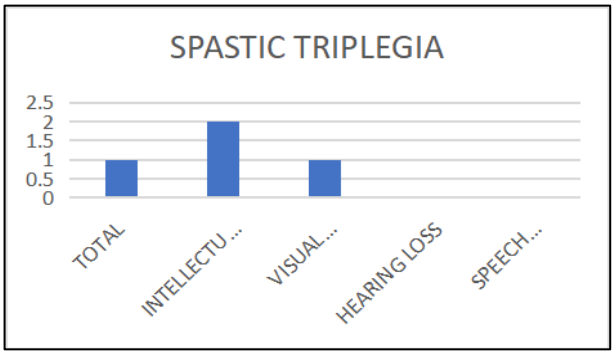

Figure 4: Types of spastic triplegia.

Among the spastic diplegia cases, most of the children were suffering from speech abnormality (n=40), whereas among spastic hemiplegic cases all the children were suffering from intellectual disability (n=3) (Figure 2,3).

In spastic quadriplegia cases, equal distribution of visual and speech abnormality were observed (n=2), whereas among spastic triplegia cases, intellectual disability was observed in maximum children (n=2) (Figure 4).

DISCUSSION

CP is one of the commonest motor disabilities of children. It is mostly accompanied by neurological and psychosocial problems.[11-13] It has been seen that the subtypes, severity of CP, and proportion of patients with associated impairments varies between the studies. Hence, aim of the present study to assess the comorbidities associated with cerebral palsy cases in Kolhapur district.

Most of the children were suffering from spastic type of CP (n=140; 56%). Similar finding was observed by El-Tallawy et al, which reported that 72.5% of children were suffering from spastic CP.[14]

Most common type among spastic CP was diplegia (n=96; 38%). A study by Raja et al reported the distribution of spasticity to diplegia 36 (48%), quadriplegia 22 (30%), and hemiplegia 16 (22%).[15]

Children were suffering from speech abnormality in spastic CP cases (n=65). In a report by Centre for disease control (CDC) and prevention observed that speech is usually affected due to increased muscle tone.[16]

In spastic hemiplegia cases, all the children were suffering from intellectual disability (n=3). A study by Himmelmann et al reported that intellectual disability was seen in individuals with cerebral malformations (>70%).[9]

Equal distribution of visual and speech abnormality was observed (n=2) in spastic quadriplegia cases. In a study by Shevell et al reported that 20% to 50% children suffered from visual impairment, and hearing loss was suspected clinically in 91% cases.[17]

Intellectual disability was observed in maximum children (n=2) in spastic triplegia cases. In study by Reid et al reported that, motor or sensory disability or uncontrolled seizure activity can be the underlying reason for intellectual disability.[18]

CONCLUSION

Therefore, it can be concluded that the motor impairment in just the top notch, the actual disability is the underlying co morbidities. Hence, a stepwise multidisciplinary approach is required for the associated comorbidity, and it can help us in improving the quality of children suffering from CP.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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