

## The Pattern of Paediatric Movement Disorder in a Tertiary Care Hospital, Dhaka, Bangladesh

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**Abstract: Background:** Movement disorder is one of the commonly encountered problems in the course of pediatric neurology practice. The urge to understand the causes, clinical spectrum of pediatric movement disorders are increasing day by day as treatment has been largely based on clinical experience rather than evidence based as the clinical trials are limited. **Objective:** The objective of this study is to investigate the types of involuntary movements and its association with different neurological diseases. At the same time this study will also try to identify the relation of age, sex and perinatal insult with movement disorder. **Method:** A retrospective analysis was conducted with the secondary data obtained from the records of the patients with movement disorder in the Paediatric neuroscience department of Dhaka Shishu (children) Hospital over a period of 2years(January 2009 to January 2011). **Result:** Total 120 children were studied. Among them 86(72%) were male & 34(28%) female. Maximum 56 (47%) involuntary movement was present in children of 1-5 year age group. Regarding involuntary movement, dystonia 58(48%) was highest followed by chorea 26(22%). Dyskinetic cerebral palsy was 66(55%) the most represented cause followed by sequelae of encephalitis 20 (16%). Perinatal insult was present in 92 (77%) children.

**Keywords:** Movement Disorder, Dystonia, Dyskinetic Cerebral Palsy.

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## INTRODUCTION

Movement disorders in childhood encompass a range of neurological syndromes that are characterized by abnormalities of tone, posture, the initiation or control of voluntary movements, or unwanted involuntary movements [1]. Movement disorders (MD) are defined as either an excess (hyperkinesias) or a paucity (hypokinesias) of voluntary and automatic movements [2, 3]. Hyperkinetic MDs can be further classified into tics, chorea, dystonia, tremor, myoclonus and

stereotypies [4, 5]. While most MDs are chronic neurological disturbances, some can develop acutely [6]. Since several MDs may be treatable, timely recognition and diagnosis is crucial [7]. In general, movement disorders in children and adolescents tend to be hyperkinetic, consisting of excess rather than diminished motor activity. Classification of the abnormal movement is based on observed features (e.g. chorea, tic, stereotypy, dystonia, tremor, etc.), with subdivisions determined by etiological factors (e.g. metabolic, genetic, infectious, neoplastic

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etc.)[8]. Assessment is primarily directed by clinical history and distinctive examination findings. Neuroimaging is typically necessary to evaluate for acquired or complex inherited dystonia [9]. In this review, we will discuss several common movement disorders that are frequently identified and its association with different neurological diseases.

### OBJECTIVES

The objective of this study is to investigate the types of involuntary movements and its association with different neurological diseases. At the same time this study will also try to identify the relation of age, sex and perinatal insult with movement disorder.

### MATERIALS AND METHODS

It is an Observational study which was conducted in Dhaka Shishu (Children) Hospital, one of the largest tertiary children hospitals of Bangladesh. All data were taken retrospectively from hospital records. Records of 2 years were included (January 2009 to January 2011). All children clinically diagnosed as movement disorders. Ethical clearance was taken from ethical committee of the hospital. Total 120 patients aged between 1-year up to 15 years were studied from register. Data were analyzed using SPSS.

### RESULTS

Total number of cases was 120 among which male and female were respectively 86(71.67%) and 34(28.33%). Involuntary movement was present in 16(13.33%) children in <1 year age group, 56(46.67%) children in 1-5 year age group, 42(35.00%) children in 6-10 year age group and 6(5.00%) children in 11-15 year. Regarding involuntary movement, the most common type was perinatal asphyxia was 53(44.17%), Neonatal jaundice was 38(31.67%), neonatal seizure was 19(15.83%), preterm/LBW was 7(5.83%) and Septicemia was 3(2.5%). Regarding involuntary movement, the most common type was dystonia

58(48.33%), followed by chorea 26(22.67%), opisthotonus 19(15.83%), athetosis 11(9.17%), mixed type of movement disorders 6(5.00%). Dyskinetic cerebral palsy was the most represented cause 66 (55%). Few more responsible causes were sequelae of encephalitis 20 (16%), sequelae of meningitis 11(9%), wilson’s disease 10 (8%), neurometabolic disease 6 (5%), neurodegenerative disorders 3 (3%), hydrocephalus 2 (2%), rheumatic chorea 1 (1%), idiopathic torsion dystonia 1 (1%). History of perinatal asphyxia was present in 53 (44%) children, neonatal jaundice was present in 38(32%) children and neonatal seizure 19(16%), preterm LBW 7 (6%), septicemia 3(2%).

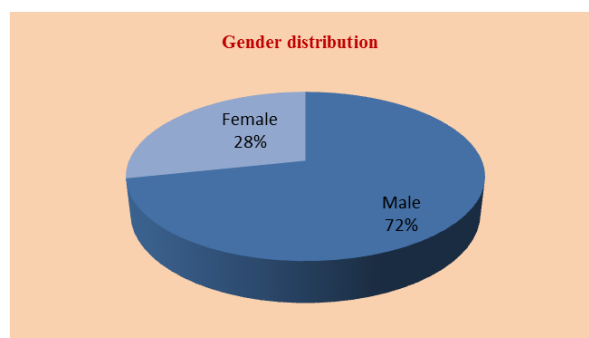


Fig-1: Gender distribution of the Patients (N=120)

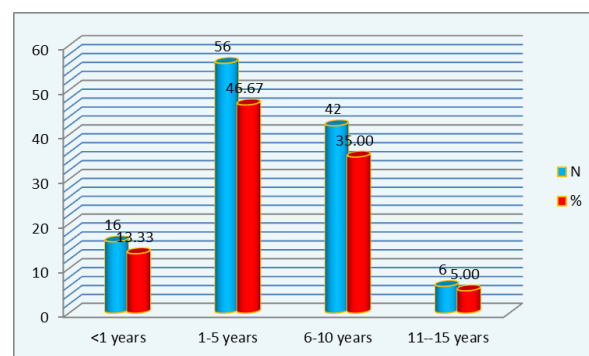


Fig-2: Movement Disorder in Different Age Groups (N=120)

Table-1: Important perinatal factors (N=120)

Perinatal insult (n=120)	Frequency	Percentage
Perinatal asphyxia	53	44.17
Neonatal jaundice	38	31.67
Neonatal seizure	19	15.83
Preterm/LBW	7	5.83
Septicemia	3	2.50

Table-2: Types of movement disorders (N120)

Movement disorder	Frequency	Percentage
Dystonia	58	48.33
Chorea	26	21.67
Opisthotonus	19	15.83
Athetosis	11	9.17
Mixed	6	5.00

**Table-3: Disease pattern of different movement disorder (N=120)**

Clinical diagnosis	Frequency	Percentage
Dyskinetic CP	66	55.00
Sequelae of encephalitis	20	16.67
Sequelae of meningitis	11	9.17
Wilson disease	10	8.33
Neurometabolic disease	6	5.00
Neurodegenerative disease	3	2.50
Hydrocephalus	2	1.67
Rheumatic chorea	1	0.83
Idiopathic torsion dystonia	1	0.83
Total	120	100

## DISCUSSION

Dyskinetic movements are involuntary movements that are frequently seen in children with neurological disorders. Our study aimed to review the different patterns, etiologies and associated factors of movement disorders. The relative frequency of various acute movement disorders widely varied among which the most frequent was dystonia (48%) followed by chorea (22%), Opisthotonus (16 %), Athetosis (9%) and Mixed (5%). On the other hand, a study identified hyperkinetic movement disorders as a group which accounted for majority of the cases, occurring in 89 of total 92 patients. Myoclonus was the most common movement disorder seen in 25 (27%) children, followed by dystonia in 21 (23%), choreoathetosis in 19 (21%), and tremors in 15 (16%) [10]. This is most likely due to demographic, epidemiological and methodological differences. In our study dystonia and chorea have been observed as the highest among all movement disorders. It also stated that Dyskinetic cerebral palsy is highly associated with these movement disorders. A study conducted among 55 participants demonstrated that dystonia and choreoathetosis are simultaneously present in dyskinetic CP. Median levels of dystonia (70%) were significantly higher than levels of choreoathetosis (27%) [11]. In this series our study found somewhat association between development of movement disorders and history of perinatal asphyxia in 44%, Neonatal jaundice/ kernicterus in 32% cases. Children with Neonatal seizure, Preterm LBW are also susceptible for brain damage and different movement disorders are often observed among them. Our study observation identified 16% children with Neonatal seizure and 8% children who were Preterm LBW presented with movement disorder later in their life. Encephalitis is one of the very common diagnosis in our department. Chorea, dystonia, tremor are often develop as a sequelae of encephalitis which accounted for 28% of all the cases. A similar study revealed that 53 patients (64% females) with static brain lesions developed progressive movement disorders. Of these, 50 (94%) had dystonia, 17 (32%) tremor, 8 (15%)

parkinsonism, 7 (13%) myoclonus, and 3 (6%) chorea. The precipitating insults included perinatal hypoxia/ischemia in 22 (42%), stroke in 12 (23%), head injury in 8(15%), encephalitis in 8 (15%), and carbon monoxide poisoning, kernicterus, and radiation necrosis in 1 patient (2%) each [12]. Though Wilsons disease and other neurodegenerative diseases are not a very frequent diagnosis in our department, but these comprised that 5% and 10% patients developed movement disorder respectively. Another study showed that among 69 patients Seven (58%) presented with headache, seven (58%) presented with tremor, three (25%) presented with dystonia, two (17%) presented with ataxia, two (17%) presented with dizziness, one (8%) presented with acute weakness accompanied with numbness in the hands and one (8%) presented with syncope[13]. A major limitation of the study is its retrospective nature. Additional confounding factors include gender bias and selection bias [14].

## CONCLUSION & RECOMMENDATIONS

In conclusion, study of movement disorder in children aiming to define etiological subgroups through a retrospective study is a time appropriate approach. All the common types can be seen presenting in children. The relative frequency of these movement disorders and their causative diseases are presented in this review. Further knowledge on the epidemiology, clinical presentation, treatment, and outcome of movement disorders in children are important for the early diagnosis, early intervention, and anticipation of potentially life- threatening complications.

### Limitation of the study

This was a single centered study with a small sized sample. So, the findings of this study may not reflect the exact scenario of the whole country.

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**Conflict of interest:** None declared

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