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Guillain-Barre Syndrome occurring as acute flaccid paralysis in children at Hayatabad Medical Complex, Peshawar

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ABSTRACT

Introduction: Guillain-Barre Syndrome (GBS) is an acute inflammatory demyelinating ascending polyradiculoneuropathy. Following the eradication of poliomyelitis worldwide, GBS is considered the most common cause of acute flaccid paralysis. A study done in Hazara division of Pakistan in 2007 reported GBS to be the leading cause of acute flaccid paralysis among children of age 12-24 months; children aged more than 96 months constituted 20% of the total cases.

Objective: To determine the frequency of Guillain-Barre Syndrome in children presenting with acute flaccid paralysis at a tertiary care hospital of Peshawar, Khyber Pakhtunkhwa, Pakistan.

Materials & Methods: A descriptive study based on retrospectively collected data of three years (March 2016 to March 2019) was conducted from September 2019 to May 2020 in the Pediatrics department of Hayatabad Medical Complex, Peshawar, in which 85 children presenting with acute flaccid paralysis were included. Cases with Poliomyelitis and those with acute flaccid paralysis with no confirmed diagnosis were excluded; exclusion of Polio patients was based on examination of stools for polio virus. Data were analyzed for descriptive statistics using SPSS 20.

Result: Out of the 85 patients with acute flaccid paralysis, 39(45.88%) had Guillain-Barre Syndrome, followed by cerebral palsy 09(10.59%) and transverse myelitis 07(8.24%). A male preponderance of 24(61.54%) was reported for GBS compared to 15(38.46%) for females. Children aged 2-4 years 19(48.72%) were more commonly affected.

Conclusion: Guillain-Barre Syndrome was the most common non-polio cause of acute flaccid paralysis in children, with a predilection for males and the age group of 2-4 years.

Keywords: Paralysis; Guillain-Barre syndrome; Child, Preschool; Poliomyelitis.

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INTRODUCTION

Many neurological conditions like poliomyelitis, transverse myelitis, Guillain-Barre Syndrome (GBS) and toxins such as lead and metabolic neuropathies cause acute flaccid paralysis. Flaccid paralysis is characteristic of heterogeneous group of clinical conditions of acute flaccid paralysis,[1] mostly Guillain-Barre syndrome (GBS) which is an acute inflammatory demyelinating ascending polyradiculoneuropathy.[2] In the post-poliomyelitis eradication era worldwide, GBS is considered the most common cause of acute flaccid paralysis.[3] After reporting large and small epidemics due to drugs, vaccine, water pollution as well as unpredicted changes in annual incidence in age subgroups, epidemiological surveillance of GBS is considered relevant.[4]

In the United States of America 1.2-3 per 100,000 inhabitants annually report Guillain-Barre Syndrome making it the most common cause of acute flaccid paralysis.[5] According to a study done in Hazara division of Pakistan in 2007, reported GBS was the leading cause of acute flaccid paralysis among children of age 12-24 months, with those over 96 months constituting 20% of total cases.[6] In Iraq, GBS is the most common cause of acute flaccid paralysis in rural children with ages between 1-4 years.[7] After polio eradication in Indonesia, from 2014-2017, acute flaccid paralysis was commonly caused by Guillain-Barre syndrome in male children between 1-4 years of age.[8] Australia, and 36 other countries of western pacific region were reported polio free in 2000 by WHO. After polio eradication in Australian children, transverse myelitis and GBS were the leading causes of acute flaccid paralysis, where 47% of children were identified with GBS, while 19% were suffering from transverse myelitis.[9]

It is expected that in Pakistan, especially in Peshawar, poliomyelitis will be eradicated soon, so it is of great importance to conduct a study to find non-polio etiology of acute flaccid paralysis. The present study was conducted to document the frequency of GBS in patients presenting with acute flaccid paralysis at Hayatabad Medical Complex, Peshawar, Khyber Pakhtunkhwa, Pakistan.

MATERIALS & METHODS

A descriptive study was conducted in the Pediatrics unit of Hayatabad Medical Complex, Peshawar, based on retrospective data from hospital records.

The duration of study was from September 2019 to May 2020; case note analysis of patients of acute flaccid paralysis from different area of the province over 3 years of time (March 2016-March 2019) were studied. Initial diagnosis of patients was based on clinical picture. Inclusion criteria was acute flaccid paralysis reported within the three years period of study; acute flaccid paralysis due to poliomyelitis, and those with no confirmed diagnosis were excluded. For exclusion of polio cases, stool examination for polio virus was done. Follow up of patients were done for 3 months of time. Data were analyzed in SPSS 20 for descriptive statistics.

RESULTS

Total of 91 patients were admitted in two years of duration in Pediatrics unit with acute flaccid paralysis. Out of 91 patients, 2 were suspected polio cases while 4 had no confirmed diagnosis and all 6 were excluded from the study. There were certain other causes of acute flaccid paralysis among which Guillain-Barre syndrome and cerebral palsy were most common. Among 85 patients with acute flaccid paralysis 39 patients were with Guillain-Barre syndrome followed by cerebral palsy with 9 cases and 7 cases of transverse myelitis.

Table 1: Etiological factors of acute flaccid paralysis in children (n=85).

Etiological factors	Frequency	Percentage
Guillain-Barre Syndrome	39	45.88
Cerebral Palsy	9	10.59
Transverse Myelitis	7	8.24
Encephalitis	6	7.06
Cord Lesion	6	7.05
Enteroviral Encephalopathy	5	5.88
Hyperkalemia	5	5.88
Malnutrition	4	4.71
Cerebrovascular Accident	4	4.71

Among 39 patients of Guillain-Barre syndrome causing acute flaccid paralysis, 24 were males while 15 were females. Among rest of patients with other causes of acute flaccid paralysis 27 were males while 19 were females.

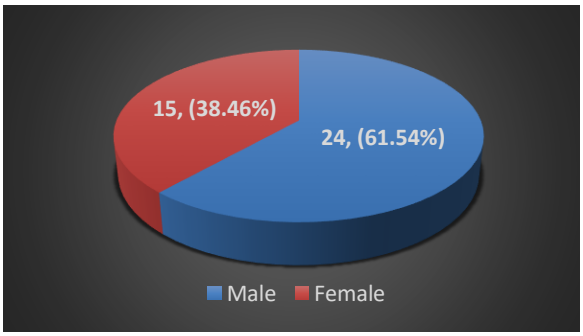

Figure 1: Gender distribution in GBS children (n=39).

GBS cases reported with acute flaccid paralysis were of different age groups. Maximum cases reported were in 3 and 4 years of children, 10 cases of GBS with acute flaccid paralysis were in age group 24 to 36 months and 9 patients were in 36 to 48 months.

Table 2: Distribution of GBS cases by age groups (n=39).

Age Groups (Months)	Frequency	Percentage
<12	2	5.12
12-24	3	7.70
24-36	10	25.64
36-48	9	23.07
48-60	3	7.70
60-72	2	5.12
72-84	3	7.70
84-96	4	10.25
>96	3	7.70

DISCUSSION

According to our study results, prevalence of Guillain-Barre syndrome was 45.88% in acute flaccid paralysis, while similar study conducted in Hazara division[6] showed 47.29% of GBS prevalence in acute flaccid paralysis. Study done in Central America[10] showed 72.2% of GBS in acute flaccid paralysis patients. Different countries reported different prevalence of GBS but reported it as the most common cause of acute flaccid paralysis after eradication of Poliomyelitis. In Hong Kong, a study from 1997 to 2002 reported 42%, Oman reported 45%, The Netherlands reported 30.8%, and Australia reported 47% of Guillain-Barre syndrome prevalence in acute flaccid paralysis.[11-13] The Americas reported highest prevalence of GBS like Central America reported 72.2% from 1989 to 1999 and Mexico reported 68% of GBS in AFP from 1988 to 1991.[1,10]

In our study result, GBS was more common in males than females. Our study results were supported by different other studies in which males were also commonly affected by GBS causing acute flaccid paralysis.[7,10,14-16] But a study done in Hazara division contradicted with our study results where females were commonly affected by GBS than males.[6]

Children 2-4 years of age were commonly affected by GBS with acute flaccid paralysis in our study showing similarity of results with most of the other studies.[13,17-19]

CONCLUSION

Guillain-Barre Syndrome was the most common non-polio cause of acute flaccid paralysis in children presenting to a tertiary care hospital of Peshawar, Khyber Pakhtunkhwa, Pakistan, with male children and ages of 2-4 years being more commonly affected.

RECOMMENDATION

Further studies based on longer time duration and larger sample sizes are recommended to allow better generalization and reliable results.

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