Original Research

Study of acute flaccid paralysis cases at tertiary care hospital Belagavi, Karnataka

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Abstract

Background: Acute Flaccid Paralysis (AFP) surveillance is a key strategy for monitoring the progress of polio eradication and is a sensitive instrument for detecting potential poliomyelitis cases and poliovirus infection. Differential diagnosis of Acute Flaccid Paralysis includes Guillain-Barre Syndrome (GBS), transverse myelitis, traumatic paresis etc. Although these cases are prevailing in the community, the reporting is still inadequate, an understanding of the natural history of AFP is necessary to boost surveillance.

Objective: The objective of this study is to ascertain the clinic epidemiological profile of AFP cases admitted in a tertiary care hospital.

Materials and Methods: A cross-sectional study was conducted from June 2014 to July 2016 among reported AFP cases to Ashoknagar Urban Health Centre from Pediatric department of KLE Hospital. A total of 41 cases were investigated. A predesigned questionnaire was used to collect data regarding sociodemographic characters, immunization history, travel history, clinical history etc. A detailed clinical examination was done for each case. Hospital records were referred for provisional diagnosis.

Results: A total of 41 AFP cases were investigated. Male to female ratio was 1.92:1. The majority of them i.e., 41.4% belonged to age group between 5 to 9 years. Most of the cases i.e., 58.5% were seen during monsoon season. Guillain-Barre (GB) Syndrome constituted around 80% of the cases with most of them presenting as ascending paralysis.

Conclusion: The most common cause of AFPs was Guillain-Barre syndrome. There was an increase in the number of cases during Monsoon season. Public-private partnerships help in early reporting and rapid investigation of cases.

KEY WORDS: Acute Flaccid Paralysis, Guillain-Barre Syndrome, Cases, Tertiary hospital, Belagavi.

Introduction

Acute flaccid paralysis (AFP) defined by World Health Organization (WHO), is sudden onset of weakness and floppiness in any part of the body in a child less than 15 years age or if a clinician suspects polio in any person of any age (excluding adults, spastic paralysis, old cases or cases with obvious causes like trauma).[1] AFP surveillance is a key strategy for monitoring the progress of polio eradication and is a sensitive instrument for detecting potential poliomyelitis cases and poliovirus infection.

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Any case of an AFP should be suspected as polio and investigated. Eradication of Polio is based on WHO's four-pronged strategy: 1) routine immunization with oral polio vaccine (OPV); 2) Supplementary, additional doses of OPV countrywide during National Immunization Days (NIDs); 3) mopping up immunization activities to catch any below five children who may have been missed during stages one and two; and 4) Enhanced surveillance for all cases of AFP and wild poliovirus.[2] More recent strategy implemented is to switch over to bivalent OPV and introduction of IPV in the immunization schedule. WHO has established standards to check the efficacy of surveillance systems in each country,

polio-endemic or not, should be able to detect at least two cases of AFP not caused by polio every 100,000 children under age 15.[2]

In 1997 the National Polio Surveillance Project (NPSP) was established as a joint collaboration between the WHO and the MOHFW, GoI, with the main objective to intensify surveillance for polio eradication through detection and investigation of childhood Acute Flaccid Paralysis (AFP).[3]

The year 2011 saw a significant decline in the total number of polio cases worldwide. After having zero cases of wild poliovirus for a year, India is no more in the list of polio-endemic countries since January 13, 2011. Despite the overall decline, there has been a steep increase in polio cases in 2011 in the other three polio-endemic countries.[4] The increase in the cases in endemic areas constitutes an incontrovertible risk to global polio eradication. As long as a single child remains infected; children in all countries remain at risk of contracting polio.

The other differential diagnosis of AFP includes Guillain-Barre Syndrome (GBS), transverse myelitis and traumatic paresis.[5] Although these cases are prevailing in the community, the reporting is still inadequate. More recently to enhance the detection of polio cases facial palsy, palatal palsy etc. has also been considered as AFP. An understanding of the natural history of AFP is necessary to boost surveillance. The aim of this study was to ascertain the clinic epidemiological profile of AFP cases admitted in a tertiary care hospital.

Materials and Methods

A cross-sectional study was conducted from June 2014 to July 2016 among reported AFP cases to Ashoknagar Urban Health Centre from Pediatric department of KLE Hospital. Ashoknagar Urban Health Centre is the field practice area of Department of community medicine, J.N.Medical College, Belagavi. A total of 41 cases were investigated. A predesigned questionnaire was used to collect data regarding sociodemographic characters, immunization history, travel history, clinical history etc. A detailed clinical examination was done for each case. Hospital records were referred for provisional diagnosis. Informed consent from parents and assent from answering children were taken. After history taking and physical examination by the clinical assistant, information was sent to the district surveillance officer for the collection of two stool specimens from the patient preferably 24 hours apart within 14 days of onset of illness. Clinical diagnosis of poliomyelitis was based on WHO criteria[6]. Ethical clearance has obtained by Institutional ethical committee KLE University.

Exclusion criteria: Acute and/or flaccid paralysis cases of age >15 yrs, Spastic paralysis, old cases or cases with obvious causes like trauma, obvious congenital anomalies or birth defects, AES without acute flaccid paralysis.

Results

The total number of AFP cases investigated were 41. Male to female ratio was 1.92:1. The majority of them i.e. 41.4% belonged to age group between 5 to 9 years. The mean age of children was 7.1 ± 3.7 years. Most of the AFP cases were from the rural areas (82.9%) (Table 1).

Table 1: Distribution of AFP cases based on their sociodemographic features

Variables	Frequency (%)
Age	
0-4	13 (31.7)
5-9	17 (41.5)
10-15	11 (26.8)
Sex	
Male	27 (65.9)
Female	14 (34.1)
Religion	
Hindu	37 (90.2)
Muslim	04 (9.8)
Setting	
Rural	34 (82.9)
Urban	07 (17.1)
Occupation of father	
Professional/semiprofessional	09 (21.9)
Skilled	04 (9.8)
Semiskilled	02 (4.9)
Manual	26 (63.4)

Table 2: Distribution of AFP cases as per seasons

Seasons	Frequency (%)
Summer	5 (12.2)
Monsoon	24 (58.6)
Autumn	6 (14.6)
Winter	6 (14.6)
Total	41

(Table 2) depicts the season wise distribution of cases in the tertiary hospital. Guillain-Barre (GB) Syndrome constituted around 80% of the cases with most of them presenting as ascending paralysis (Table 3). Five children had paralysis of lower limbs, eleven children had both upper and lower limb involvement, three children had bulbar involvement, two children had facial palsy and mixed palsy was seen among the rest twenty children.

Of the 41 cases reported 31.7% of them were investigated within twenty-four hours, 60.9% of them within 24-48 hours and 7.3% of them were investigated after 48 hours. It was seen that 36.5% of the cases gave a history of travel in the past thirty days from the day of onset of paralysis. Only one case had directly visited the tertiary hospital, 34.1% of the cases had already visited one hospital prior to admission and 63.4% of the cases had visited two or more hospitals prior to getting admitted in KLE.

Table 3: Clinical variants of AFP cases

Variables	Frequency (%)
Provisional diagnosis	
GB syndrome	33 (80.5)
Facial palsy	02 (4.9)
Post diphtheritic neuritis	03 (7.3)
Traumatic neuritis	02 (4.9)
Others	1 (2.4)
Type of paralysis	
Ascending	31 (75.6)
Localised	7 (17.1)
Unknown	3 (7.3)
Fever at onset of paralysis	
Present	12 (29.3)
Absent	29 (70.7)

Discussion

Eradication of polio requires sensitive surveillance even in the absence of polio cases. Initially, surveillance is needed to detect poliovirus. Finally, surveillance is needed to prove the absence of poliovirus. A country's surveillance system needs to be sensitive enough to detect at least one case of AFP for every one lakh children under 15 years of age even in the absence of polio[[6]. In this study majority of children belonged to the age group between 5-9 years which was similar to a study conducted by Rasul et al.[8] Sokhey & Kakre in their study observed a peak number of polio cases between 1-9 years.[9,10] In this study, the male to female ratio was 1.9:1. Although the incidence of infection and prevalence of antibodies do not differ in boys and girls the disease is more common in boys.[11] The male preponderance was also seen in many other studies[12,13] and may be due to more concern about a male child. In this study majority of the cases were reported during monsoon season. Similarly, a recent study conducted by Kumbhar et al. in 2015[14] also reported a maximum number of (63.46%) patients of GBS presented in the rainy season. The majority of the studies[15] had shown increased number of cases in the winter season, there may be a change in trend with more predilection in monsoons in recent times.

Most of the cases in our study were diagnosed as GB syndrome. Similarly, studies conducted by Rasul et al and Ebrahimi et al have also pointed the same.[8,15] In general, the outcome of GBS is more favorable in children than in adults. Deaths are relatively rare, especially if the disorder is diagnosed and treated early. However, the recovery period is long, often weeks to months, with a median estimated recovery time of 6-12 months. In one pediatric series, full recovery within 3-12 months is experienced by 90-95% of pediatric patients with GBS. The prognosis of GBS is generally favorable, but it is a serious disease with a mortality of approximately 10%, and approximately 20% of patients are left with severe disability.[16,17] Recently there is a rise in a number of GBS cases as noted in studies of AFP by McKhann GM et al[18] and many others,[19,20,21] which showed GBS as the major leading cause of AFP in children. GBS causes severe persistent disability in 14% of patients in one year. Loss of full strength, persistent pain and need for professional change occur in about 40% cases. Mortality is around 4% within the first year.[22] In our study post-Diphtheria polyneuritis, Facial palsy was also seen on rising as a part of AFP surveillance. This indicates a good surveillance mechanism as the inclusion of borderline/ambiguous cases of AFP, increases sensitivity and leads to detection of nearly all polio cases.

Almost 92% of the cases in the study were investigated within 48 hours of reporting which is way beyond investigation rate of 80% as an indicator for good surveillance.[3] Public-private partnership played the main role in making this possible. Most of the manpower and good communication system was provided by J.N.Medical College to the Government health centers. In this study on health facility contact analysis, we could see that most of the patients had prior visits to other health institutions which went unreported. This delayed the mechanism of rapid diagnosis and also delayed treatment to patients. This information is analyzed by District immunization officer and Surveillance medical officer, and can determine which facilities/individuals are either not reporting AFP cases or reporting them late, and accordingly prioritize the visits to these reporting sites. Also, sites that are frequently visited by children less than 15 years, but not already included in the reporting network, will be added (expansion of reporting network).[23]

Conclusion

Intensive surveillance is essential to reach the goal of polio eradication in India with Pakistan and Afghanistan still among the polio-endemic countries, the threat of spread always remains. The increase in a number of cases was seen among males with the majority being GBS and occurring more during monsoons. Continuous dedicated work with early notification and investigation is an important cornerstone for polio eradication. The increase in Public-private partnerships may help the cause.

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