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Clinical profile and outcome of "Acute Flaccid Paralysis" in children admitted to K.T.Children Hospital, Rajkot.

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I. Introduction

Acute flaccid paralysis (AFP), as defined by World Health Organization (WHO), is sudden onset (within 1-10 days) of weakness and floppiness in any part of the body in a child less than 15 years age.

There are many conditions leading to AFP, poliomyelitis was one of the most important differential diagnoses in the past. The diagnoses most often confused with polio are Guillain-Barre syndrome (GBS), transverse myelitis, traumatic paralysis and sometimes other neurotropic viruses like Rabies, Japanese encephalitis, metabolic disorder like hypokalaemic periodic paralysis, neuropathies, neuromuscular junction disorders and tumours should also be considered in evaluation of AFP. The possibility of polio should be considered in any case of AFP.

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 one case of AFP not caused by polio every 100,000 children under age 15. As long as a single child remains infected with polio; children in all countries remain at risk of contracting polio. So not even a single case of AFP should go unevaluated.

According to the study conducted at K T Children Hospital, Rajkot there were a significant number of AFP cases reported from Sep 2016 to Sep 2017, with no cases of wild polio, and the majority being Guillain Barre Syndrome.

This study not only helped in finding the clinico-epidemiological pattern of AFP but also the effect of various treatment modalities on the prognosis and the co-morbodities associated with the disease.

Objectives

To study clinico epidemiological profile of patients with AFP admitted to K.T.Children Hospital , Rajkot.
To study clinical outcome of patients with AFP.
To study associated co morbidities in AFP cases.

II. Materials And Method

It was a prospective hospital-based study conducted over one year period (Sep-2016 to Sep- 2017) in the K T Children Hospital, a tertiary care centre, Rajkot.

Inclusion Criteria: Cases of AFP fulfilling the WHO criteria, admitted to KTCH Rajkot between Sep 2016-Sep 2017 [52 cases]

Exclusion Criteria: Todd's paralysis, Floppy infants were excluded from the study.
Suspected AFP with a very short stay in our hospital (<24 hours) due to any reason.

Sample size: All cases fulfilling the inclusion criteria during the study period were included in the study.

Institutional Ethical Committee permission was taken before initiating the study.

After taking informed written consent from the parent/guardian, all children fulfilling inclusion criteria were enrolled and detail history with clinical examination were recorded in a pre-designed and pre evaluated proforma. The relevant laboratory and/or radiological investigations were carried out. Stool samples were sent for examination as per AFP surveillance guidelines. Samples collected by Rajkot district AFP surveillance team.

Based on detail clinical evaluation, relevant investigations and WHO case definitions, diagnoses were made and treatment instituted. Patients were observed for any complications or squeal.
The acquired data were entered in SPSS Statistical software version14. Differences between clinical groups (survivors and non-survivors) were compared.

III. Results& Discussion

During the one-year study period, 52children having AFP were enrolled in the study. The final classification showed Guillain Barre Syndrome (GBS) in 45 (86.5%) of the cases; Non-Polio Enterovirus in 6 (11.5%) cases and Transverse Myelitis in 1(2%) of the cases.
Studies of AFP by Jalal et al. (2011) and Sharma KS et al. (2011) showed GBS as the major leading cause of AFP in children[8,11].

GRAPH 1: Final diagnosis of AFP cases.[N = 52]

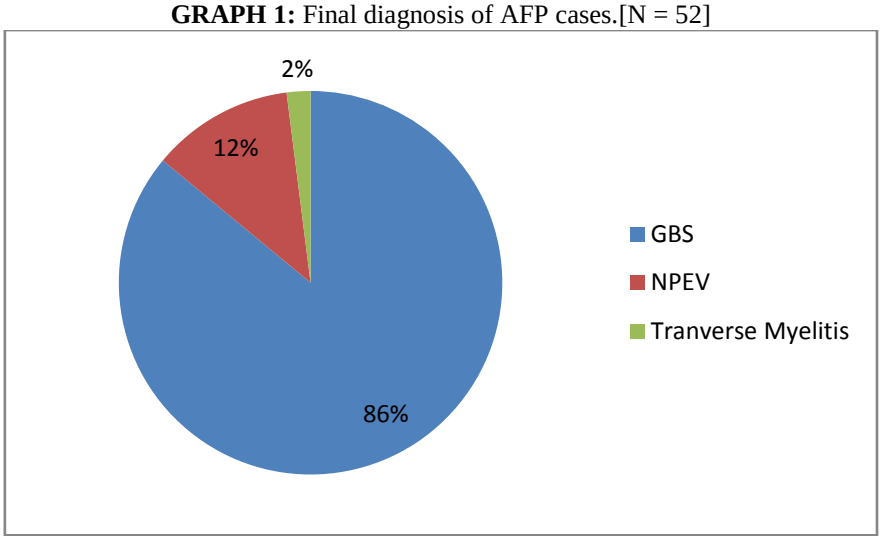


Table1: Distribution of AFP cases according to Age and Sex [N= 52]

AGE(YEARS)	No. of cases
1-5	27(52%)
5-8	8(15%)
8-12	17(33%)

SEX	No. of cases
MALE	30 (57%)
FEMALE	22 (43%)

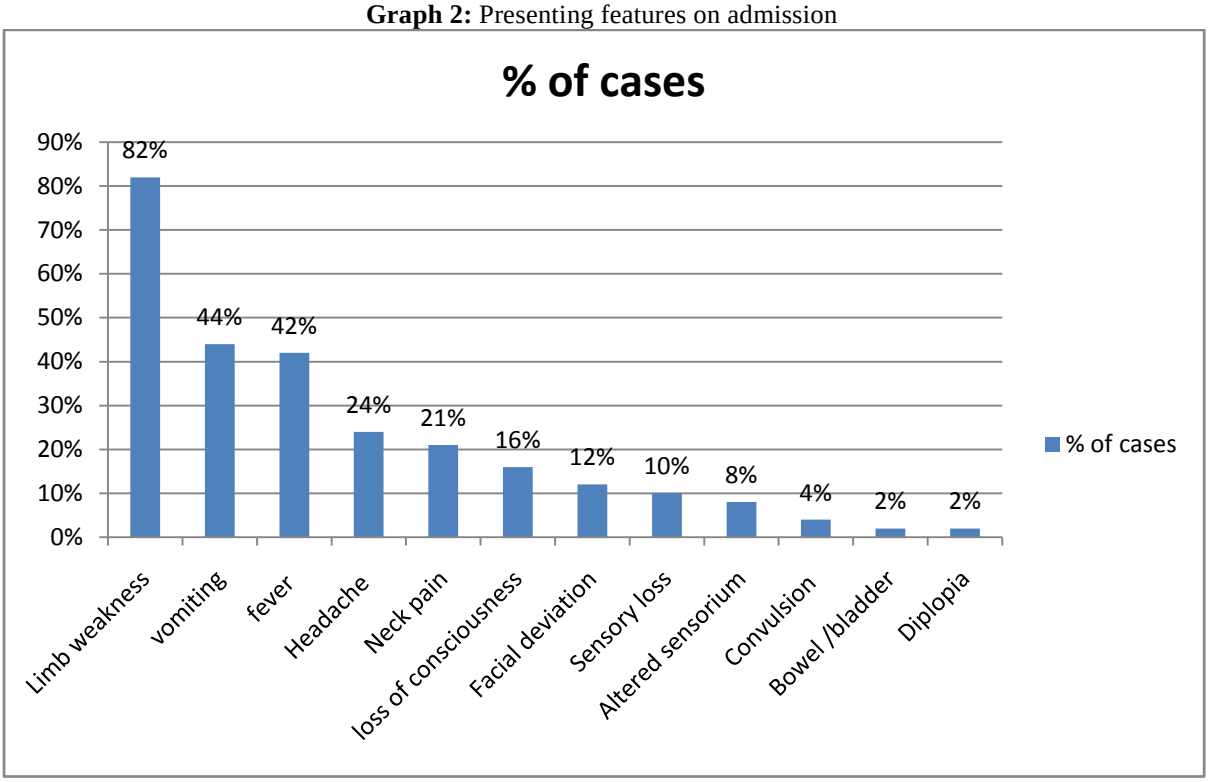
Maximum (52%) children come in the age group1-5 years. Most of them were male (57%).This is similar to previous studies of Jalal et al and Narang et al[8, 12].

Table 2: Duration of illness before admission [N = 52]

Duration of illness before admission	No. of cases
1 DAY	4(8%)
2DAYS	34 (65%)
3 DAYS	12 (23%)
>3 DAYS	2 (4%)

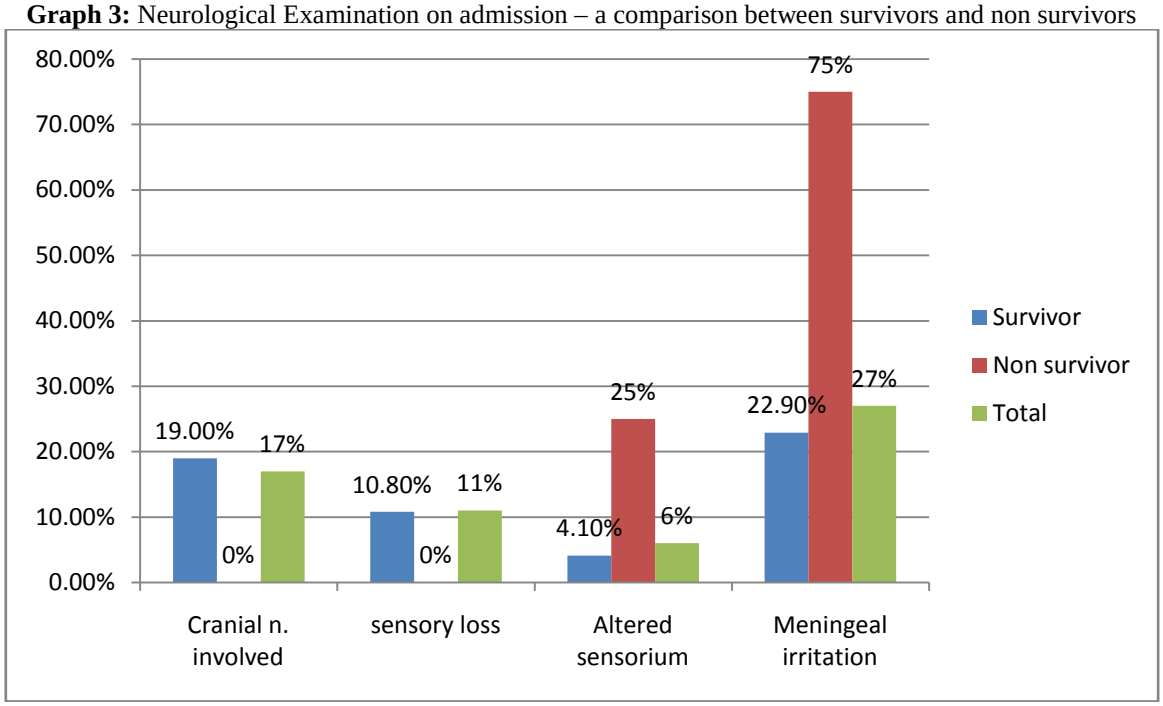
The duration of illness prior to hospital admission was mostly <3 days (96%) and rarely > 3 days (4%) indicating the acuteness of the illness.

Graph 2: Presenting features on admission



The important presenting features were limb weakness (82%) , vomiting (44%) , fever (42%),headache (24%) , neck pain (22%), loss of consciousness (16%), facial deviation(12%) and sensation loss (10%). This is similar to the study of Sharma KS et al.[11]

Graph 3: Neurological Examination on admission – a comparison between survivors and non survivors



On neurological examination, mental status was found to be abnormal in 3 (6%) cases while, sensory loss in 6 (11%) cases. Cranial nerves were involved in 9 (17%) of the cases; mostly 6th nerve, and is not associated with poor outcome in our study.

Above graph shows a significant association of presence of signs of meningeal irritation and altered sensorium with poor outcome during the course of disease.

Table 3: Reflexes (on admission) – a comparison between survivors and non survivors

	Survivor [N=48]	Non Survivor [N =4]	Total [N=52]
DTR Absent	41 (85.4%)	4 (100%)	45 (86.5%)
Plantar Extensor	2 (4.1%)	1 (25%)	3 (5.8%)
Gag Absent	21 (43.7%)	4 (100%)	25 (48%)

Above table shows that absence of deep tendon reflexes and gag reflex has a detrimental effect over the course of illness, while presence of plantar extensor does not shows any such association in our study.

Table 4: Areas with weakness or paralysis at time of admission

	SURVIVOR (N= 48)	NON SURVIVOR (N=4)	TOTAL (N= 52)
QUADRIPARESIS	21(43.7%)	04(100%)	25(48%)
PARAPARESIS	20(41.6%)	00(0%)	20(38%)
HEMIPARESIS	01(2.1%)	00(0%)	01(2%)
MONOPARESIS	01(2.1%)	00(0%)	01(2%)
FACIAL	06(13%)	00(0%)	06(12%)
BULBAR	02(4.3%)	01(25%)	03(6%)
RESPIRATORY	01(2%)	02(50%)	03(6%)

Above table shows that all the non survivor patients have quadriparesis at the time of admission. Also the involvement of facial and bulbar muscles is associated with poor prognosis.

Stool examination was done as per AFP surveillance criteria. In 2 (4%) children who expired, stool could not be collected due to very poor GCS. Among the rest 50 patients, 3 (6%) had Non-Polio Enterovirus (NPEV) while no virus was isolated in 90 % cases.

Table 5: Treatment given to the patients with AFP- A comparison between survivors and non survivors.

TREATMENT GIVEN			
	SURVIVOR (N= 48)	NON SURVIVOR (N=4)	TOTAL (N= 52)
PICU CARE	28(58.3%)	04(100%)	32(62%)
MECHANICAL VENTILATION	7(14.5%)	04(100%)	11(21%)
ANTIBIOTICS	48(100%)	04(100%)	52(100%)
STEROIDS COMPLETED FOR 5 DAYS	14(29.1%)	00(0%)	14(26.9%)
IV IG	27(56.2%)	04(100%)	31(60%)
INOTROPES REQUIRED	7(14.5%)	04(100%)	11(21%)
ANTI CONVULSANTS	1(2.1%)	01(25%)	2(4%)
ANTI HYPERTENSIVE	10(20.8%)	03(75%)	13(25%)

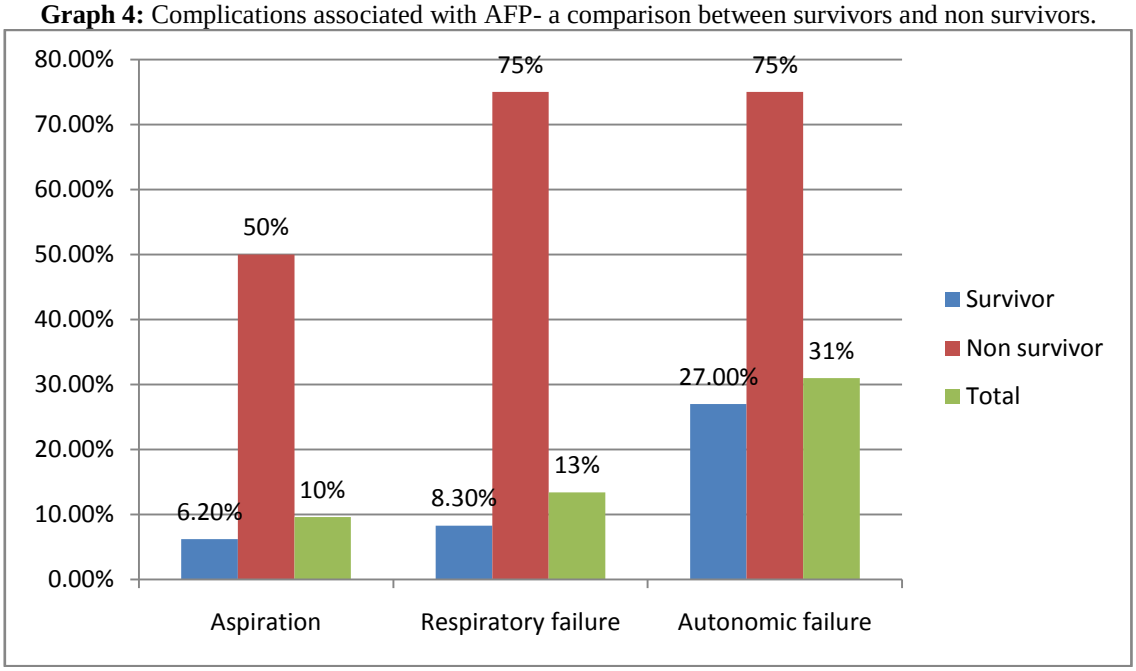
Thirty two (62%) children required ICU care and 11 (21%) received mechanical ventilation. Antibiotics and steroids were used in all cases.

Intra Venous Immuno Globulins were used in 31 (60%) children with progressive course of illness .Antihypertensive were used in 25% of the cases while Inotropes were required in 21% of the sick children.

The above results are in comparison with previous study done by Narang et al [12], which shows that 59% of the patients required ICU care and 18% received mechanical ventilation.

Forty eight (92.3%) children survived while 4(7.7%) expired. Hence this study proves that use of Intra Venous Immunoglobulins in early course of illness would lead to decreased mortality from GBS, which was the leading cause of AFP in our study.

Graph 4: Complications associated with AFP- a comparison between survivors and non survivors.



Complications were observed in children in form of Autonomic disturbances (31%), respiratory failure (13.4%), and aspiration pneumonia (9.6%). This study shows that major cause of death in patient with AFP is autonomic failure, respiratory failure or aspiration.
This is comparable to studies by Sharma KS et al[11] and Narang et al[12] which shows that most common complications in patients with AFP were autonomic disturbances (22%) followed by respiratory failure (11%) and septicaemia (9%).

IV. Conclusion

In our study, GBS was the commonest causes of AFP and it could be the most common differential diagnosis. The differential diagnoses of AFP were found to be GBS, Non-polio Enterovirus (facial palsy) and Transverse Myelitis. Apart from floppiness/ weakness, the other associated presenting features were fever, vomiting, headache, neck pain etc. Involvement of all four limbs, bulbar or respiratory muscle involvement, need for mechanical ventilation, ICU care, requirement of ionotropes and complications like respiratory failure and autonomic failure were associated with significant morbidity and mortality.

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