Original Article

GBS and AFP

GBS and AFP (Acute flaccid Paralysis) System in AJK

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ABSTRACT

Objective: Main objective of the study is to highlight the major cause of AFP and % of GBS represents the AFP during the study period.

Study Design: Retrospective analytical study.

Place and Duration of Study: This study was conducted in AJK, for the duration of three years from January 2011 to December 2013.

Materials and Methods: Retrospective analysis of AFP cases reported during 2011-2013. Primarily the AFP cases investigated through history and clinical examination. Principal cause of AFP (Acute flaccid Paralysis) cases were investigated through specific tests like serum electrolytes, CSF (cerebrospinal fluid), electromyogram and viral culture from stool sample to exclude poliovirus. All the cases reported from AJK and taken on the line list labelling as GBS were included in the study during 2011-2013.

Results: Three years data analysis shows more than 50% GBS cases presenting AFP and the numbers are increasing every year. Most of the GBS and even AFP belong to 6-59 months age group. More than 55% GBS cases recover completely and this proportion increased from 2011-2013.

Conclusion: Data analysis revealed GBS is a major cause of AFP in AJK and needs not to be overlooked to keep poliovirus transmission ceased here. AFP surveillance system is huge resource and this is a high time to study all the causes responsible for acute flaccid paralysis to strengthen polio eradication efforts and to develop understanding for prevention and control, to avoid acute flaccid paralysis related morbidity and mortality amongst children in Pakistan.

Key Words: GBS, Guillain Barre Syndrome AFP Surveillance, Polio.

INTRODUCTION

Conditions presenting with AFP can be grouped into 2 categories .Conditions always presenting with AFP like, Paralytic poliomyelitis, GBS (Guillain Barre syndrome), Transversmyelitis, Traumatic neuritis and conditions sometime presenting with AFP like, Muscle hypotonia, Hypokalemic paralysis, POTTs disease, TB Meningitis, Osteomyelitis. This study mainly focuses on GBS which seems the foremost cause of AFP in AJK.

Polio is the priority operation of WHO in Pakistan because the situation study revealed, Pakistan, Cameroon and Syria pretence bigger risk of Poliovirus export globally[1]. The end of 2013 brought >99% decrease in Polio case burden since 1988 but three endemic countries Pakistan, Nigeria and Afghanistan has failed to interrupt virus transmission yet[2].

To eradicate Polio from Pakistan AFP surveillance was one of the four prong approach adopted.AFP (acute flaccid paralysis) is a group of sign and symptoms which are similar to Poliovirus infection[3]. AFP surveillance strategy was adopted to identify all the AFP cases and stool sample of all AFP cases tested to exclude poliovirus[4].

Polio generally presents with asymmetrical paralysis while AFP surveillance system also include infections presenting symmetrical paralysis. Unfortunately clinical picture of Polio is not typical, it sometimes present like other neurological diseases as GBS (Guillain- Barre Syndrome). That's the reason definitive diagnosis cannot be made through serological testing and viral culture from stools specimen is considered to be the golden rule to exclude poliovirus[5].

Conditions presenting with AFP can be grouped into 2 categories .Conditions always presenting with AFP like, Paralytic poliomyelitis, GBS (Guillain Barre syndrome), Transversmyelitis, Traumatic neuritis and conditions sometime presenting with AFP like, Muscle hypotonia, Hypokalemic paralysis, POTTs disease, TB Meningitis, Osteomyelitis.

This study mainly focuses on GBS which appear the foremost cause of AFP[6] and remain a common cause of AFP after eradication of Polio in many countries[7,8,9]. Number of studies show frequency of GBS is 5-5/100000 children/year globally[10,11,12]. GBS is an acute demyelinising poly neuropathy measured by the ascending symmetrical flaccid paralysis, on careful examination DTR (deep tendon reflex) are either absent or decreased. In addition to flaccid paralysis patient may experience sensory symptoms and involve cranial

nerves, respiratory muscles and autonomic nervous system may also affect in GBS. GBS with axonal involvement is more severe than demyelinating type, diagnosis of the disease is mostly on clinical grounds in addition to this CSF (Cerebrospinal fluid) examination, electrophysiological testing, EMG (Electromyography), NCS (Nerve conduction study) are essentials to confirm the diagnosis.

GBS was discovered by three French neurologists in 1916, Georges Guilain, Jean-Alexendre Barre and Andre Strohl[13]. Principally there are three subtypes of GBS, AIDP (acute inflammatory demyelinating polyradiculoneuropathy), AMAN (acute motor axonal neuropathy) and AMSAN (acute motor and sensory axonal neuropathy).The most common subtype is AIDP this is syndrome[14], AMAN is characterized by the neurological deficit based on motor defect[15] and AMSAN involve both motor and sensory axonal defect[16]. C. Millar Fisher in 1956 described Ataxia, Areflexia and Opthalmoplegia now known as Miller Fisher, another important variant of GBS.[17]

Management of the disease includes supportive treatment, frequent monitoring, and maintenance of airway and ventilator support when indicated, feeding, bladder and bowl management. Specific treatment included intravenous immunoglobulin (IVIG) have magical effect beside plasmaphresis. Prognosis and recovery is good in 95% of cases but it takes weeks to months[18].

MATERIALS AND METHODS

Retrospective analysis of AFP cases reported during 2013-2011.Primarily the AFP cases investigated through history and clinical examination and principal cause of AFP (Acute flaccid Paralysis) cases was investigated through specific tests like serum electrolytes, CSF (cerebrospinal fluid), electromyogram and viral culture from stool sample to exclude poliovirus. Efforts were made during the study to analyse what % of GBS represents the AFP during the study period and seasonal trend of GBS was identified using time series. All the cases reported from AJK and taken on the line list labelling as GBS were included in the study during 2013-2011.

RESULTS

Data consideration: Numbers rounded off for calculation purposes.

Proportion of the GBS presenting AFP: 32/50 (64%), 23/34(67.7%) and 21/45 (46.7%) GBS (Gillian Barre syndrome) presenting AFP (Acute Flaccid paralysis) cases respectively in 2013, 2012, and 2011.Data analysis in table also revealed 28/50(88%), 21/34 (91%), 18/45(86%) of GBS cases presented with symmetrical paralysis follow by fever in 63%,70% and 57% in GBS cases during 2013,2012 and 2011 respectively (Table 1).

Age: 37/50 (74%), 24/34 (71%) and 26/45 (58%) AFP cases belong to 6- 59 months age category during 2013, 2012 and 2011 respectively and same was the picture revealed by the data analysis (table 2) for GBS, 25/32 (78.1%),14/23 (61%) and 11/21(52%) of GBS cases belongs to 6-59 months age group.

Immunization status: Data analysis shows all the cases having age matched OPV doses in both routine EPI and SIAs (Special Immunization Activities). Cases reported in 2013 having 27 months median age and received 10 median OPV doses while 81% cases received 3 routine EPI doses of OPV. While 36 months median age and 10 median OPV doses while 83% of cases received 3 OPV doses through routine EPI, 48 months median age and having 9 OPV doses while 68% of the cases having 3 OPV doses through routine EPI during 2012 and 2011 respectively.

Table No.1: Shows year wise % of GBS presenting AFP and clinical feature of cases during study period 2011-2013.

Year	AFP	GBS		Asym:					Fever		
	n	n	%	Yes		No		Yes		No	
				n	%	n	%	n	%	n	%
2013	50	32	64.0	4	13	28	88	20	63	12	37
2012	34	23	67.6	2	8.7	21	91	16	70	7	30
2011	45	21	46.7	3	14	18	86	12	57	9	43

Table No.2: Age wise distribution of GBS presenting AFP

Year	0-5				6-59				60+				Accumulative	
	AFP		GBS		AFP		GBS		AFP		GBS		AFP	GBS
	n	%	n	%	n	%	n	%	n	%	n	%		
2013	0	0	0	0	37	74	25	78.1	13	26	7	21.9	50	32
2012	0	0	0	0	24	70.6	14	60.9	10	29.4	9	39.1	34	23
2011	1	2.2	1	4.76	26	57.8	11	52.4	18	40	9	42.9	45	21

Table No.3: Shows distribution of median age and additional OPV doses in GBS during 2011-2013

Year	GBS	Median age	Median SIA OPV	Routine OPV doses
2013	32	27	10	81
2012	23	36	10	83
2011	21	48	9	68

Table No.4: Distribution of GBS cases according to clinical outcome 60 days follow up during 2011-2013

Year	GBS	Residual weakness				Died	
		yes		No			
		n	%	n	%	n	%
2013	32	8	25	23	71.9	1	3.1
2012	23	7	30	14	60.9	2	8.7
2011	21	7	33	12	57.1	2	9.5

Clinical outcome of the GBS: On follow up examination after 60 days from onset of paralysis 23/32 (72%), 14/23(61%) and 12/21 (57%) had no residual weakness whereas 1/32 (3%),2/23(9%) and 2/21 (9.5%) patients died in 2013,2012 and 2011 respectively.

Seasonal Trend in GBS cases: There was no significant seasonal trend for GBS stirring found during the study period apart from a considerable increase in GBS cases 32, 23 and 21 from 2013, 2012 and 2011 respectively.

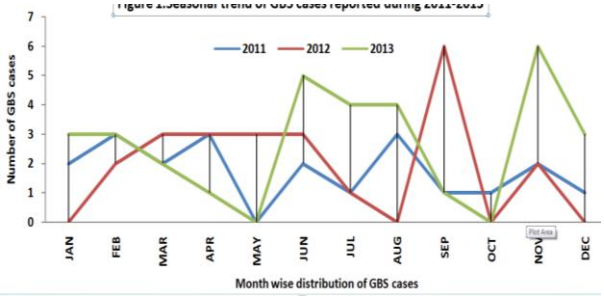

Figure No.1: Seasonal trend of GBS cases reported during 2011-2013

DISCUSSION

Pakistan appearing to be the last country to eradicate Polio and major global case burden is reported from Pakistan. Country failure to interrupt transmission of poliovirus poses threats of poliovirus export to many countries. Numbers of cases reported and districts/areas infected this year are high among last five year. There are number of district which has not reported a wild polio case through the AFP surveillance system but the positive environmental sample shows presence of poliovirus. Number of AFP cases reported annually decreasing throughout the country. All the issues collectively hampering the polio eradication progress in Pakistan.

During this study data analysed retrospectively to identify the major contributor of AFP and efforts were made to develop an understanding between causes of AFP and AFP surveillance system in AJK. Field experience of AFP surveillance system in AJK shows many doctors believe that polio is the only cause of AFP, resulted a sharp decline of AFP cases in AJK.

Data analysis revealed GBS is a major cause of AFP in AJK and needs not to be overlooked to keep poliovirus transmission ceased here. GBS causes 64% of AFP cases in 2013 similarly 67% and 47% in 2012 and 2011 respectively. More than 80% of GBS cases presented with symmetrical paralysis/weakness. More than 72% of GBS patients fully recovered when examined after 2 months of the paralysis/weakness started in cases reported during the year 2013, while 61% in 2012 and 57% in 2011 fully recovered within 2 months after paralysis/weakness started. There was no significant seasonal trend found in GBS infection during the study period in AJK.

CONCLUSION

AFP surveillance system in Pakistan is based on sensitivity more than specificity is a daring for not to miss any poliovirus circulation in the country. AFP surveillance system is huge resource and this is a high time to study all the factors responsible for acute flaccid paralysis to strengthen polio eradication efforts and to know more about how to avoid morbidity and mortality related to AFP in Pakistan.

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