ORIGINAL ARTICLE

ACUTE FLACCID PARALYSIS SURVEILLANCE: A 5 YEARS STUDY OF BANNU, PAKISTAN

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Background: Acute flaccid paralysis (AFP) is clinical presentation marked by acute onset of weakness and reduced tone. Aetiologies of AFP are diverse including infectious agents, trauma or autoimmune reaction. Currently only three countries in the world that are Nigeria, Pakistan and Afghanistan have endemic poliomyelitis. Pakistan's polio crisis represents one of the last hurdles in a 23-year campaign run by the World Health Organization. Bannu due to its geographical location stands out to be one of highest risk areas for Poliomyelitis. The objective of this study was to determine frequency of AFP and their aetiologies in District of Bannu during time period of four years from 2007 to 2011. **Methods:** It was a cross-sectional descriptive study. Data was collected from EDO office District Bannu and analysed using Microsoft Excel 2007. **Results:** During this period there were 180 cases of AFP in district Bannu. 15% of cases were diagnosed as Guillian Barre Syndrome, making it the leading aetiology. Only 3 (1.66%) cases were diagnosed with Poliomyelitis. Out of 180 AFP cases 104 cases were male and 76 cases were female. **Conclusion:** Bannu needs enthusiastic educational and vaccination campaigns to eradicate Polio from the area and henceforth from the Pakistan.

Keywords: Acute Flaccid Paralysis, Guillian Barre Syndrome, Poliomyelitis, Vaccination.

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INTRODUCTION

Acute flaccid paralysis (AFP) is complex clinical syndrome defined as "the acute onset of focal weakness or paralysis characterized as flaccid (reduced muscle tone)".[1] The term "flaccid" indicates the absence of spasticity or other signs of disordered central nervous system motor tracts such as hyper-reflexia, clonus, or extensor plantar responses.[2] It has a broad base of potential aetiologies with possible illness due to infection of the Anterior horn cells of the spinal cord (Poliomyelitis, Non polio enterovirus, Vaccine associated Poliomyelitis), Guillian–Barré syndrome (GBS), Neurotropic Viruses (Rabies virus, Japanese Encephalitis virus etc.).

Acute traumatic sciatic neuritis (intramuscular gluteal injections), Acute Transverse Myelitis (TM), Neuropathies (Exo-toxin of Corynebacterium Diphtheria, toxin of Clostridium Botulinum, tick bite paralysis etc.), Diseases of the Neuromuscular junction(myasthenia gravis etc.), Disorders of muscle (polymyositis, viral myositis etc.) and Metabolic disorders (hypokalemic periodic paralysis) etc.[3] One of important aetiology of AFP is Polio. Polio is a crippling and potentially fatal infectious disease.[4] One in 200 infections of Polio leads to irreversible paralysis.[5] Among those paralyzed, 5–10% die due to paralysis of respiratory muscles.[6] The World Health Organization (WHO) and the Rotary Foundation has been spearheading a global initiative for the eradication of polio since 1988.[7] Since the advent of polio vaccine (OPV and IPV) in 1988 and through its implication in national immunization programs, the global polio eradication initiative has been successful in its efforts to eradicate this illness from most of the countries in the world.[7] WHO adopted several strategies to control and ultimately eradicate polio from most regions of the world such as routine childhood immunization, supplementary immunization, intensified surveillance and rapid response to identified outbreaks.[8] Surveillance for polio is essential for eradication. Surveillance systems for polio have been developed under guidance of the global polio eradication initiative.[9] As for now, only four countries that are India, Nigeria, Pakistan and Afghanistan have endemic poliomyelitis, and within these countries the disease is confined to certain areas.[10] Pakistan has come a long way in its struggle to eradicate polio.

In the early years of the 1990′s the annual incidence of polio was estimated at more than 20,000 cases a year, but over the past 5 years, an average of only 100 cases per year have been reported.[11] Despite this Pakistan's polio crisis represents one of the last hurdle in a 23-year campaign run by the World Health Organization.[12] Poor security and religious opposition in the country is one of the causes of low vaccination rates. AFP surveillance was introduced in Pakistan in 1995, and by 1998, staff in all provinces were trained in AFP surveillance and were sending monthly case reports to the Expanded Program on

Immunization (EPI) office.[13,14] Nearly three out of every four cases (69%) are from conflict affected parts of the FATA (74 cases) and associated areas of Khyber Pakhtunkhwa.[15] The total number of cases reported for 2011 were 198compared to 144 in 2010.Last year's floods displaced millions of people, spreading the virus and undercutting vaccination efforts.[16] These areas along with Bannu and neighbouring districts, represents areas with the first line of surveillance activities, as the surveillance and reporting of new cases is limited in these regions, which due to a relatively open border with adjoining Afghanistan also represents a source of cross border transmission of Polio.[17]

MATERIAL AND METHODS

This was cross-sectional survey conducted from 2007 to 2011 in District Bannu. Data was collected from EDO (Health) Office Bannu, reviewing all the recorded cases of AFP in District Bannu who had undergone complete clinical and biochemical investigation and routine 60 days follow-up. The data was analysed through MS Excel 2007 and presented via graphs and charts.

RESULTS

Total 180 cases of AFP were recorded from 2007 to 20011. Out of 180 AFP cases there were 3 reported cases (1.66%) of Poliomyelitis, 1 in 2010 and 2 in 2011. 177 were non Polio AFP cases, 37 cases (20.55%) were recorded in 2007, 39 cases (21.66%) in 2008, 26 cases (14.44%) in 2009, 32 cases (17.77%) in 2010 and 46 cases (25.55%) were recorded in 2011.Out of the 180 AFP cases, 104 were male (58.88%) and 76 were female (41.11%). Except for 2008, where the female patients were 54%, there was a male predominance ≥60%. 2 of the confirmed cases of Poliomyelitis were male whereas 1 was female.

One hundred and thirty-one (77%) of the AFP cases were non immunized and only 41(18%) of all the cases were completely immunized.

The maximum number of AFP cases was reported in the age group of 13–24 months (63 cases) representing 35% of the total AFP cases.

Of the total 180 cases, 112 (62%) cases had no residual weakness or paralysis. Only 54 (30%) cases reported residual weakness or paralysis.

Amongst the total 180 AFP cases, the leading cause was GBS representing 15% of the total cases followed by CVA (8.33%), arthritis (7.22%), injection neuritis (7.22%), viral neuropathy (6.11%), meningitis (4.44%), Pseudo-paralysis (4.44%) and Encephalitis (2.22%) respectively.

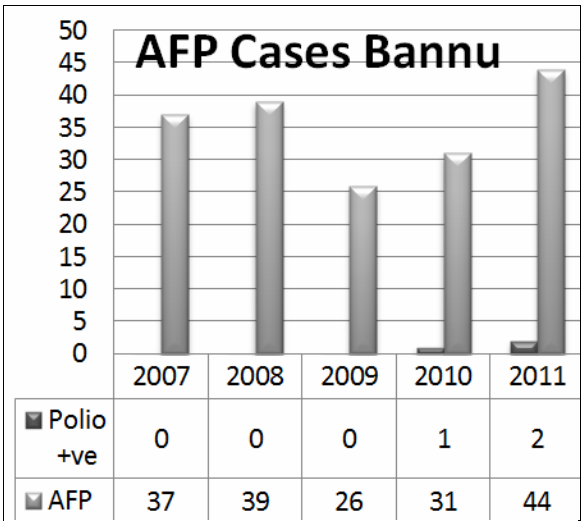


Figure-1: Number of Polio+ and AFP cases in Bannu

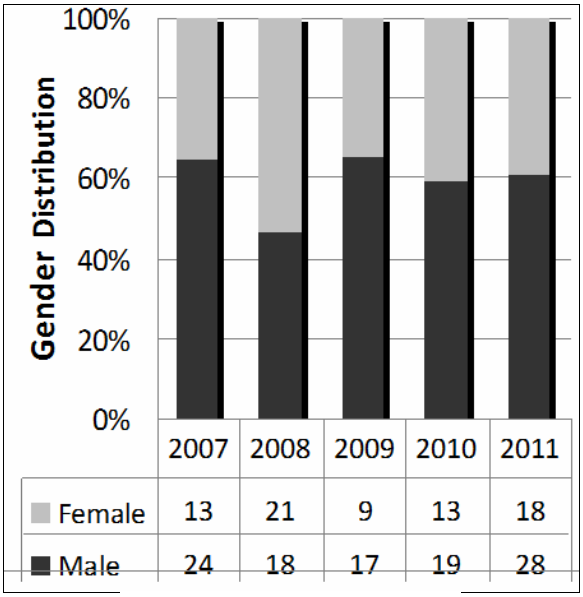


Figure-2: Gender distribution

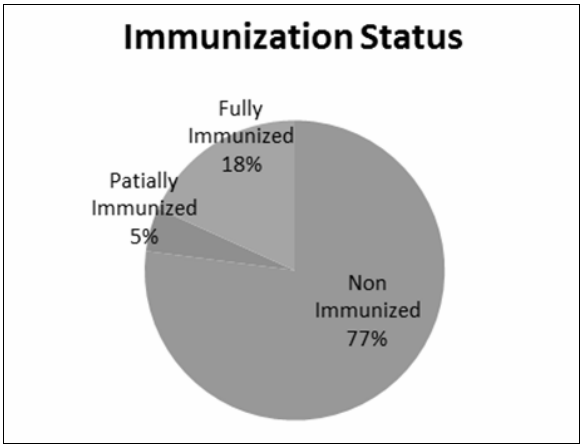
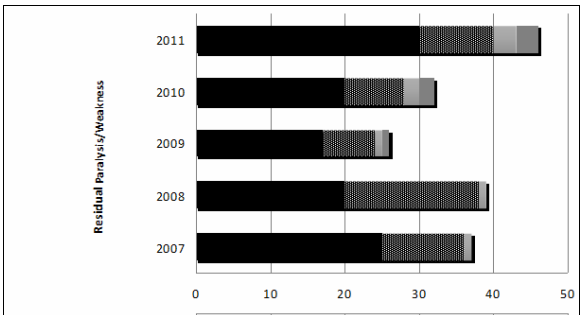


Figure-3: Immunization status



	2007	2008	2009	2010	2011
Non Follow up cases	0	0	1	2	3
Died	1	1	1	2	3
Cases With Residual Paralysis / Weakness	11	18	7	8	10
Cases with No Residual Paralysis/ Weakness	25	20	17	20	30

Figure-4: Follow-up of cases

DISCUSSION

Bannu District presents a pattern of having 2 cases in 2011 and 1 in 2010 compared to none in the 3 previous years. The immunization status was also found quite deficient; more than 75% were not properly immunized. The affected poliomyelitises were also not immunized. 40 AFP cases were excluded from the study as they had not undergone proper clinical and biochemical investigation. The government has been making efforts recently in association with the WHO regarding the improvement of the surveillance apparatus, evident by the fact that all the cases in the last 2 years that had been properly investigated. The awareness of the general population regarding the proper reporting and pre conceived notions regarding vaccination still need to be worked upon.

Guillian–Barré syndrome was the leading cause of AFP with 15% of the cases. It has already been established as an important cause of AFP.[18] However the detection of a definite aetiology of GBS needs an advanced laboratory and facility, which is not available in Pakistan. Injection Neuritis with 7.22% of the cases also presented a unique insight regarding the better training of health professionals as these cases can be prevented with better administration of intramuscular injection.[19] Encephalitis (2.22%), Meningitis (4.44%), Viral Neuropathy (6.11%) and Transverse Myelitis (1.66%) represent AFP cases with a microbial origin. Thus the incidence rate can be decreased by the proper implementation of various public health measures.

Thirty five percent of the reported cases were between 1–2 years and a further 19% between 2–3 years age group representing 54% of the AFP cases being under 3 years of age.

A major pre-requisite for polio-free certification by the World Health Organization is that the local surveillance system successfully detects one case of non-polio acute flaccid paralysis (AFP) per 100,000 children below 15 years of age per annum and that no cases of polio occur for three consecutive years.[20]

The incidence of AFP cases in district Bannu was approx. 18 times the standard expected value of 1 case in 100000 populations as the total population as of 2010 was 971,930. We also inferred that the immunization status in the District is also very poor and even deficient in some instances.

CONCLUSION

Bannu owing to its geographical location stands to be a high risk area regarding Poliomyelitis because of the migration trend from the neighbouring Afghanistan, and along with it the silent transmission of the Polio virus. Also there is a lack of proper vaccination campaigns in certain areas of the district due to the conservative nature of the society which also leads to the non-cooperation of the people to the various elements of the surveillance system. Bannu requires proper vaccination campaigns and education campaigns to spread awareness amongst the people regarding the spread and control of this disease. Also efforts need to be made so that the people understand the role of the surveillance system and thus report all of the AFP cases and play a helpful role in the eradication of this dreadful disease.

AUTHOR'S CONTRIBUTION

MUF, MZH: Conceived the study, data collection and write-up, AAK, MS, SAA: Literature search, data analysis, bibliography and proof reading

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