EDITORIAL

POLIO ERADICATION: MILITANCY, SECURITY AND PUBLIC COMMITMENT

Poliomyelitis is a viral disease, which is caused by one of the three serotypes of the Poliomyelitis virus. The virus is spread by a faeco-oral route and the contaminated water supply of the food chain is the main vehicle of the viral transmission. Both injectable inactivated as well as live oral Polio vaccines became available in early 1950s, which had to be given at least thrice, to have protection against all three viral serotypes. The developing countries usually had such problems but even in the developed countries, its control was only made possible through universal vaccination. Although the civic amenities had their part to play, the vaccine administration had made polios eradication possible. The vaccine generates life long immunity which stops the proliferation of the virus in the intestine, breaking chain of transmission. By the mid eighties, large scale immunization against the polioviruses had its dividends in many industrialized countries. Some countries, mainly due to their communist regimes ensured it by their tough vaccination policies. Two such countries had made exceptional success, Czechoslovakia as well as Cuba, having eradicated the Poliovirus from their soil in 1960 and 1962, respectively[1,2]. It made other countries think for eradication of the causative Polio viruses. Which was an achievable goal, when safe, effective and strongly immunogenic vaccines were available. Their universal administration to the children was made possible by the establishment of an intricate system of vaccine delivery. This system was integrated with the health care system of the developed countries whereas the underdeveloped nation had to make specific arrangement for the vaccination.

Poliomyelitis was, therefore, eliminated from the United States in 1970s. After 1979, no case had originated in that country but the disease had been brought into the country by travelers with polio, which continued till 1993[3]. Currently, only two neighboring countries of the world are left as Poliovirus endemic, Pakistan and Afghanistan. The virus passes through the infected persons of a highly mobile population, in between these two countries, where border crossing is not adequately guarded. Even Nigeria has reported no case of Polio after 24 July, 2014[4]. When such focus of a disease exists anywhere in the world, mankind remains under a perpetual threat of its acquisition because it can be taken by a traveler, in his intestine, anywhere in the world. Therefore, Pakistani passengers travelling abroad are unceremoniously restricted, to leave their country unless they show a valid certificated of immunization against the Poliomyelitis[5].

There were many reasons for Pakistan, to have such a uniquely unfavorable status. By then, even the countries, like Somalia, Nigeria, Syria and Iraq had freed themselves, from the disease. I have served for at least for ten years as a member of the Polio Eradication Certification Committee of the WHO. We have been isolating and typing the Poliovirus strains in our laboratory at the Armed Forces Institute of Pathology (AFIP) Rawalpindi, Pakistan. We have done many studies about Polio vaccination and its coverage in the society. There was a time, when the vaccination campaign was at stake, and we had to intervene at national level to get the vaccination done, in the end of 1996. At that time, when there were many questions being asked by the media and general public about the efficacy and safety of the Poliovirus vaccine, which was procured for the program. We had taken the samples and encouraged the vaccination to process. With the kind courtesy of our personal friends at National Institute of Biological Standards and Control (NIBSC), Potters Bar, England, we had scientifically proven the efficacy of the vaccine at that time and that effort had led to the confidence in public for Polio vaccination. In Pakistan we did well, even much better than our neighbor India. We had a sudden upsurge of the paralytic polio cases after 2007[6]. Every case of paralytic polio is just a tip of the iceberg

and there are thousands of subclinical cases, which actively secrete the virus, without developing clinical symptoms by themselves but may infect others. Even Afghan authorities were cursing Pakistan of being the cause of the origin of their cases of Poliomyelitis. The world has taken this country as a hub of the disease and there were reasons to believe that the viral strains were being propagated in our population and polluting the sewage, which was making way back to the potable water. Others were being infected and they were taking the virus not by a recognized international traffic but by different means. The virus was being exported by highly mobile militants, who had their hiding places inside our lawless and out of reach areas and they were moving to the other parts of the world, wherever there were disturbances.

In 2014, there was a five-fold increase in the number of reported WPV1 related paralytic cases, in comparison with the same period in 2013. In 2014, such cases were concentrated mainly in the FATA and KP, where 87% of all cases were reported. Moreover, the wild Poliovirus was also trickling into the main urban areas. The WPV1 as well as circulating vaccine-derived poliovirus (cVDPV) 2 strains were isolated from the sewage samples of many more Pakistani cities. Luckily, in the areas outside the KPK and FATA, a shield of immunity existed due to an adequate vaccination coverage. Therefore, these cities did not face outbreaks and the transmission was not sustainable. Winter provides us with an opportunity, when the transmission of WPV is low and if the efforts for vaccination campaigns intensified during that season, the goal may be achievable. This is needed through national commitment to reach the children in hitherto are inaccessible, zones of insecurity[7].

During the early part of this decade, the endemic situation of Poliovirus, in the troubled zones and Pakistan, had serious international implications. It was the breeding place of the virus, from where, it was moving along with the clandestine activities of militants. China had been free from the Poliovirus, since 1999, when the virus was reintroduced there from India. Its last indigenous case had occurred in 1994. In 2011, in Xinjiang region of Western China, close to the borders with Pakistan, the virus had spread with at least seven confirmed cases.

The strain was Wild Polio Virus Type 1 and was similar in its genetic code, to that found in Pakistan[8]. With the start of Syrian conflict, the country had attracted many fighting people. It led to reappearance of Poliomyelitis, first time after 1999. A recent outbreak has crippled at least 13 children in Syria. Scientifically, it was confirmed that the causative viral strain had its origin in Pakistan. Furthermore, it was being transmitted across the Middle East. Genetic sequencing of the poliovirus strains detected in the sewage in Egypt, Israel and Palestinian territories, in the 2012 had linked them with same origin[9]. Therefore, on the basis of molecular epidemiology, we could deduct that the wild Poliovirus was being transmitted from the Mediterranean coast to the great wall of China.

The situation was even worse inside Pakistan. People of Federally Administrated Tribal region and adjacent areas of KPK and Baluchistan as well as Karachi faced a big problem of refusal of the vaccine, attack on Polio teams and resentment against the exploitation of polio vaccination campaigns to reach the terrorist hideouts. It was compounded by the religious decrees in the affected areas[10]. There were other problems which were compounding the eradication of the virus from the world. The emergence of circulating cVDPVs, in 2000, which were genetically unstable Sabin-strain viruses, were also imposing a threat. The had the potential to revert toward the genotypic and phenotypic profile of the virulent parent strain. It was because of its long term circulation in those people, who had low immunity levels[11]. In Pakistan by 2014, we had 306 case of paralytic polio due to wild strain and 22 due to CVDP. In 2015, the total cases have dropped down to 30 by the later part of August[4]. As the law and order situation has improved in Pakistan, the vaccination campaigns are resumed and the situation has been changing. The concerted efforts could only become possible, after the

security forces have created a conducive environment of safety, security and confidence[12].

Much has been learnt in the past. Many donor organisations and friendly countries have pumped in monetary resources and vaccine supplies. In Islamabad, a Polio Reference Lab is established which is WHO accredited and can do intratypic discrimination between the isolates[10]. As to our legacy of virology service, much work is being carried out at the AFIP Rawalpindi, Pakistan, too. We hope that finally, we shall get rid of this scourge, which has tarnished the image of the country, in the international community[13]. The problems of insecurity and inaccessibility were tackled during that period by the military action in the dangerous zones, where Polio vaccination was impossible, due to the killing of vaccination workers. This led to 82 per cent reduction in polio cases. It is the time to finally eradicate the poliovirus. The missed children need to be tracked, in 554 high risk union councils with the establishment of data support centres[14].

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