Setback in Polio Eradication in India in 2002: Reasons and Remedies

This refers to a very timely editorial entitled 'Setback in Polio Eradication in India in 2002: Reasons and Remedies' by Drs. T. Jacob John, Naveen Thacker and Jagdish M. Deshpande(1).

Some of their observations are correct, but some observations need clarification, while some issues have been left out in the editorial. Their observations suggest inadequate vaccine coverage and non-vaccination are reasons for increase in number of polio cases in the year 2002. The authors had also indicated that OPV vaccine has not made much impact. In case OPV vaccine had made any major impact, the median age of polio cases would have moved upwards. The incidence of polio has declined, but there are three contributing factors (*i*) OPV vaccination, (*ii*) immunity provided by wild polio viruses circulating in the community and (*iii*) improvement in hygiene and sanitation during this period, leading to less exposure to infection.

After initiation of AFP surveillance all the data related to polio are being provided by NPSP and so it happens to be the only source of informations pertaining to polio incidence in India. This author had studied AFP line lists from Rajasthan for the years 2000, 2001 and 2002. The study of these line lists shows that there have been misclassifications of AFP cases, and many compatible polio cases and VAPP cases had been discarded as non-polio cases, thus the authorities were under the impression that polio in Rajasthan was under control and would soon be eradicated. According to NPSP there were fifteen compatible polio cases in Rajasthan in year 2000, but study of line list showed that there were 58 polio cases in year 2000 in Rajasthan, but all had been discarded as non-polio cases(2).

Lack of hundred percent vaccine coverage is one of the reasons for failure of the eradication program, but not the only reason for failure to eradicate polio, in that case only un-vaccinated and partially vaccinated children would have developed polio. Vaccine failure is the main hurdle in polio eradication.

Increasing the vaccine coverage may bring down further the number of polio cases, but, polio can not be eradicated unless reasons for vaccine failure are found, because cases will continue to occur because of vaccine failure.

Polio can be caused by wild polio virus or mutant neurovirulent polio virus in OPV, called vaccine associated paralytic polio (VAPP). Although incidence of VAPP is extremely low but the incidence can be higher because of (*i*) vaccine failure and (*ii*) when OPV is given to immunocompromized children whether due to disease or drugs. The incidence of vaccine failure is high and on rise in India(2,3). As IPV is not available the doctors have two options–(*i*) not to administer OPV to immunocompromized child and let him or her be vulnerable to wild polio virus infection or (*ii*) administer OPV to the child and expose him or her to the risk of VAPP which is very high for these children. The learned authors have not touched the issue of VAPP in their excellent editorial.

The resurgence of wild polioviruses had shown that there had been some deficiencies in the vaccine and/or the strategy.

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REFERENCES

1. Jacob John T, Thacker N, Deshpande JM. Setback in polio eradication in India in 2002: Reasons and Remedies. Indian Pediatr 2003; 40: 195-203.
2. Paul Y. Accuracy of the National Polio Surveillance Project Data in Rajasthan. Indian J Pediatr 2002; 69: 667-673.
3. Ahuja B, Gupta VK, Tyagi A. Paralytic poliomyelitis (1989-1994): Report from a Sentinel Center. Indian Pediatr 1996; 33: 739-745.

Reply

We are happy to respond to Dr. Yash Paul's letter commenting on our paper on the reasons for the setback in polio eradication and remedies needed for setting right the defects in our national efforts. First of all he seeks clarification on our statement that "the increase in cases in 2002 is due to inadequate performance of immunization efforts". However, he does not state explicitly what clarification is sought, nor does he state why he doubts that inadequate immunization was contributory to the outbreak of polio. It is common knowledge that a successful immunization program averts outbreaks.

Dr. Paul states that immunity provided by wild polioviruses circulating in the community contributes to a reduction of incidence of polio. This is only partly true since circulating polioviruses are the cause of polio in the community. However, soon after an outbreak of polio the incidence will decline on account of the decrease in the size of the pool of susceptible children. This is only a temporary phenomenon as the pool of susceptible children enlarges continuously with new births in the community. Thus, overall, circulating wild viruses do not reduce incidence. To put it another way, in India, prior to the introduction of immunization virtually 100% of population were getting immune with wild virus infections by the age of 5-10 years. Yet, the incidence of polio was uncontrolled.

He also believes that improvement in hygiene and sanitation leads to less exposure to infection, leading to a decline in the incidence of polio. This is a common error; in fact the incidence rose in industrialized countries with increasing levels of hygiene and sanitation. This paradox is well known in Public Health circles.

Dr. Paul uses his letter as a medium to complain about misclassification of cases of acute flaccid paralysis (AFP) in Rajasthan. We wish to highlight that the modern classification of polio is based on virology. Only AFP with wild poliovirus in stool is classified as polio due to wild virus. In a child with AFP and appropriate stool specimens, the absence of wild viruses is accepted as evidence against the diagnosis of wild virus polio. Indeed it is not AFP that is under eradication, but wild polioviruses.

Thus the criterion of eradication is the absence of wild polioviruses in stools of children with AFP for three consecutive years. Obviously clinical and virological surveillance has to be of the highest possible quality in order to provide confidence in the criterion of eradication. We wish to point out that this issue did not emerge from our paper, but was inserted by Dr. Paul. Our recommendation is that any complaints about misclassification should be taken up with the local surveillance medical officer and with the national polio surveillance project officers.

Dr. Paul does not seem to have understood the issues relating to vaccine failure. The phenomenon of vaccine failure with OPV was detected in India and investigated in depth,