Indian J Pediat 49 : 257-259 ,1981

Vaccination against smallpox : is it relevant now ?

Mahendra Dutta, M.D.

The eradication of smallpox from India and all the countries of the world was certified by International Commission of Experts in April, 1977 and December, 1972 respectively. In view of possible serious complications after primary vaccination the Commission of 1979 recommended that compulsory vaccination be discontinued. Therefore physicians have little justification to recommend for new-born and older children, protection against a non-existing disease and to expose them to the risk of unnecessary morbidity and mortality which may result from vaccination. Smallpox vaccination of children should be stopped under medical advice.

Key words : Smallpox vaccination.

Although 'lymph' (smallpox vaccine) was introduced into India in 1802,[1] it took 175 years to eradicate the scourge of smallpox from the country. The eradication of the disease from the globe in 1979 by the judicious use of smallpox vaccine necessitates an urgent review of the vaccination policy in India.

Intensified campaign against smallpox in India

The National Smallpox Eradication Programme (NSEP) was launched in 1962; its aim was primary vaccination or re-vaccination of almost the entire population of the country within a period of three years. Approximately 60 million primary vaccinations and 440 million re-vaccinations were performed during the period 1962-1966. However, the disease continued unabated in many parts of the country and the vaccination performance also started declining. A joint Government of India-World Health Organisation (WHO) assessment in 1967 brought out the fact that mass vaccination alone would not eradicate the disease and that other measures like case detection and containment of outbreaks were needed to eliminate the remaining endemic foci. The NSEP strategy was therefore revised and health workers throughout the country were oriented in the new strategy during the years 1968-1972. By then sufficient freeze-dried vaccine was being indigenously produced and its administration by the bifurcated needle was being widely practised.

A two year intensified campaign (1973-75), emphasising active search for cases followed by containment, was successfully implemented throughout the country with assistance from the WHO to achieve a smallpox-free status. The

From the National Institute of Communicable Diseases, 22-Sham Nath Marg, Delhi-110054.

Reprints requests - Dr. M. Dutta.

last smallpox case in India occurred in Cachar district of Assam in May, 1975. Amazingly, the number of primary and re-vaccinations given through the duration of the campaign was not substantially higher than in the preceeding years; but vaccine was applied mostly to the people at high risk i.e. those in the infected village or locality, and in the surrounding areas.

Post-eradication vaccination policy

The eradication of the disease from India, Bhutan and Nepal was certified by an International Commission consisting of a group of independent experts, in April 1977, after two years of intensive surveillance following the achievement of smallpox-free status. The Commission recommended that primary vaccination should be continued until the last known focus of the disease was eliminated from the world.[2] The Global Commission for the Certification of Smallpox Eradication[3] that met in December 1979, 26 months after the world's last known case of endemic smallpox had occurred in October, 1977, certified that smallpox eradication has been achieved throughout the world and that there was no evidence that it will return as an endemic disease; the Commission recommended that smallpox vaccination should be discontinued in every country except for investigators who may be at risk on account of handling smallpox virus in the laboratory.

As of 1st June 1980, 145 countries of the world have already stopped routine smallpox vaccination or made vaccination no longer obligatory, and only in 46 countries smallpox vaccination is still obligatory.[4] In India, an expert group has already recommended to the Government the discontinuation of compulsory smallpox vaccination and the national smallpox vaccination programme.

Complications due to vaccination

These can be minor or major.[5] Minor complications from which recovery is quick and complete, are fortunately by far the commonest and include non-specific vaccinial rashes, implantation vaccinia and generalized vaccinia, Major complications include eczema vaccinatum, with case fatality rate of 15-25 per cent, progressive vaccinia and encephalitis. Progressive vaccinia occurs in persons with immunological defect, either congenital or acquired, due to neoplastic disease of reticulo-endothelial system such as leukemia or in those receiving immunosuppressive, corticosteroid or radiation therapy, and is almost invariably fatal. Post-vaccinial encephalitis is sometimes fatal or may leave residual neurological sequelae. Yet another complication is secondary infection including tetanus resulting from extraneous contamination of vaccination site.

Only limited information regarding the relative frequency of the complications in India is available.[2,5,6] These include (i) autoinoculation from vaccination-one to three per thousand primary vaccinations; (ii) secondary infection-five to 20 per cent among primary vaccinees; (iii) tetanus-16 deaths due to post-vaccination tetanus were reported from Madras city among nearly 700,000 primary vaccinations performed between 1963 and 1970; and (iv) post-vaccinial encephalitis-28 cases of post-vaccinial encephalitis were reported from different states of the country from

1962 to 1971 - 23 of them among primary vaccinees, giving a ratio of one case per 4.6 million primary vaccinations performed. Of the 23 cases for which the outcome is known, nine died. Experience in Tamilnadu showed that reported figures were underestimated. From Madras city seven deaths were reported due to post-vaccinial encephalitis out of nearly 700,000 primary vaccinations performed from 1963 to 1970 i.e. one death for about 100,000 primary vaccinations.

Should vaccination continue ?

Since vaccination carries a small but definite risk of complications that may be even fatal, its benefits must be weighed against this risk. There is ample documented evidence that there is no natural focus of smallpox existing anywhere in the world and there is no animal reservoir; only a limited number of laboratories abroad (six in mid-1980) are known to be securely holding stocks of variola virus for research. Therefore, there is absolutely no risk of any person naturally acquiring smallpox infection today.

As "an insurance against the unknown" sufficient stocks of freeze-dried smallpox vaccine are to be maintained at the Central Research Institute, Kasauli and at other centres abroad to meet any unforeseen emergency anywhere, by way of reappearance of smallpox.

Thus, physicians have little justification to recommend for new-born or older children, protection against a non-existing disease and to expose them to the risk of unnecessary morbidity and mortality which may result from vaccination. Vaccination could in fact be now considered an unethical practice; it is not unlikely that (mis) use of smallpox vaccine may invite medico-legal cases from enlightened public due to any of its serious complications. Therefore, vaccination of the people against this disease has no relevance now and should be stopped under medical advice. Health Departments of the Central and State Governments should urgently amend the health laws to discontinue compulsory vaccination and modify the recommended schedules of immunization under the Expanded Programme of Immunization.

References

1. Topa PK : War against smallpox-develoment of stable vaccine. J Com Dis 6 : 169, 1974
2. Basu RN, Jezek Z, Ward NA : The Eradication of Smallpox from India. World Health Organization, South-East Asia Regional Office, New Delhi, 1979
3. Weekly Epidemiological Record : W.H.O. Geneva. 55 : 33 & 121, 1980
4. Personal communication from WHO/ SEARO, New Delhi.
5. Topa PK, Ray SN : Complications of smallpox vaccination. J Com Dis 6 : 204, 1974
6. Rao AR : Smallpox. The Kothari Book Depot, Bombay, 1972