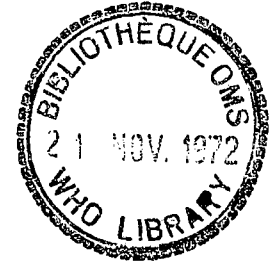




FOLLOW UP STUDY OF SMALLPOX VACCINATION IN THE NEWBORN

by

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Summary

Two hundred and thirty-three children were given primary vaccination during the neonatal period; 108 were revaccinated one year after primary vaccination and 125 after two years. The immunity level as measured by this response to revaccination was found to be high up to two years of age. Revaccination between two and three years of age will help in maintaining a high level of immunity in these children.

The present study, a follow up of a previous study (Lakhanpal 1968) was designed to assess the immunity status after one and two years in children vaccinated during the neonatal period, mostly within the first seven days after birth, and to compare it with the immunity status of children who were vaccinated between four months and six years after birth.

Method and material

This study was started in January 1969 and was completed in December 1969. It was designed to assess the immunity status one year after primary vaccination in 108 children who were vaccinated in the neonatal period and to compare it with the immunity status of an equal number of children who were first vaccinated between the age of four months and six years. In a second and parallel study the immunity status was assessed two years after primary vaccination in two groups, each comprised of 125 children, one vaccinated in the neonatal period and the other between the age of four months and six years.

Vaccination was done in children living in or near Patiala City. Freeze dried vaccine procured from the USSR was used. New vials were opened every day and the scratch method for vaccination was employed. Two scratches were given on the left arm. Slight oozing of the blood was allowed after a few seconds. The results were read on the third, sixth and ninth day and were classified according to WHO criteria as "major" or "equivocal" reactions.

Results

First study. One hundred and eight children in the neonatal group and the same number of children between four months and six years of age were revaccinated one year after primary vaccination. The age at primary vaccination and the results of revaccination are shown in Table 1. In the neonatal group, 70 of 108 children were given primary vaccination within the first week of life: 31 children were one day old and 14, five and nine children were two, three and four days old respectively. The remainder were given primary vaccination within 28 days of life. Of the 108 children given primary vaccination in the neonatal period, 100 (92.6%) had an equivocal response on revaccination and eight (7.4%) a major reaction. In the

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group given primary vaccination at older age, 98 (90.7%) showed an equivocal response and 10 (9.3%) a major reaction. As there is no statistical difference in the responses of the two groups following revaccination, it is concluded that the immunity, as measured, is the same in both groups one year after primary vaccination.

Second study. The results of revaccination two years after primary vaccination are shown in Table 2. Of 125 children given primary vaccination in the neonatal period, 99 were given primary vaccination within seven days of life; 58 were one day old, 19, 12 and four were two, three and four days old respectively. The rest were given primary vaccination within 28 days of life. On comparing the results of these two groups, it is noted that equivocal reactions were seen in 95 (75.9%) of the neonatal group and in 108 (86.4%) of the older group. The difference is statistically significant ($P = 0.1$).

From this study, it would appear that the immunity two years after primary vaccination is somewhat lower among those vaccinated in the neonatal period than among those vaccinated at an older age.

It will be interesting to determine the response of revaccination three years after primary vaccination. However, it is difficult to follow children for this long a period.

Conclusion

A child can be conveniently vaccinated soon after birth or during the neonatal period and acquires a high level of immunity for two years. Revaccination between two to three years of age is recommended for maintenance of a high level of immunity.

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REFERENCE

Lakhanpal Urmila (1968) Smallpox Vaccination in the New Born, Indian J. med. Res., 56.7, pp. 1034-1039

TABLE 1. RESPONSE TO REVACCINATION ONE YEAR AFTER PRIMARY VACCINATION IN CHILDREN VACCINATED DURING THE NEONATAL PERIOD AND BETWEEN FOUR MONTHS AND SIX YEARS OF AGE

Type of reaction	Neonatal period													Four months to six years												
	Age when first vaccinated - in days													Age when first vaccinated - in months												
	1	2	3	4	7	14	21	28	Total	4	5	6	12	24	36	48	60	72	Total							
Equivocal reaction	28	13	5	9	11	19	5	10	100	17	9	16	47	2	-	4	1	2	98							
Major reaction	3	1	-	-	-	1	1	2	8	2	3	1	4	-	-	-	-	-	10							
TOTAL	31	14	5	9	11	20	6	12	108	19	12	17	51	2	-	4	1	2	108							

TABLE 2. RESPONSE TO REVACCINATION TWO YEARS AFTER PRIMARY VACCINATION IN CHILDREN VACCINATED DURING THE NEONATAL PERIOD AND BETWEEN FOUR MONTHS AND SIX YEARS OF AGE

Type of reaction	Neonatal period													Four months to six years												
	Age when first vaccinated - in days													Age when first vaccinated - in months												
	1	2	3	4	7	14	21	28	Total	4	5	6	12	24	36	48	60	72	Total							
Equivocal reaction	44	15	8	3	5	7	7	6	95	18	4	11	52	10	5	4	4	-	108							
Major reaction	14	4	4	1	1	3	2	1	30	3	2	1	9	1	1	-	-	-	17							
TOTAL	58	19	12	4	6	10	9	7	125	21	6	12	61	11	6	4	4	-	125							