



Title	Chickenpox Vaccination of Healthy Children : Immunological and Clinical Responses and Protective Effect in 1978-1982
Author(s)	Horiuchi, Kiyoshi
Citation	Biken journal : journal of Research Institute for Microbial Diseases. 1984, 27(2-3), p. 37-38
Version Type	VoR
URL	https://doi.org/10.18910/82427
rights	
Note	

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CHICKENPOX VACCINATION OF HEALTHY CHILDREN: IMMUNOLOGICAL AND CLINICAL RESPONSES AND PROTECTIVE EFFECT IN 1978-1982

KIYOSHI HORIUCHI

Department of Pediatrics, Tokyo Jikeikai Medical College, 3-19-18 Nishishinbashi, Minatoku,
Tokyo, 104 Japan

A total of 915 normal children without a history of varicella were immunized with a live varicella vaccine (Oka strain) between 1978 and 1982. As clinical reaction after vaccination, fever and or a slight rash was observed in only 10 children. A serological response was observed in all 524 children examined. Of the 854 children who could be followed, 602 children had contact with varicella patients, but extremely mild varicella with a rash developed in only 10 of them. Mild zoster occurred in one child who was admitted to hospital with mycoplasma pneumonia.

RESULTS AND DISCUSSION

A live varicella vaccine (Oka strain) at a viral dose of 500 to 1,500 PFU (usually 500 PFU) was given to normal children, and their clinical and immunological responses and the protective effect of the vaccine were followed.

1. Clinical and immunological reactions after vaccination

A total of 915 normal children were vaccinated between 1978 and October 1982 (Table 1). For three weeks after vaccination, the body temperature of the vaccinees was measured twice a day, in the morning and evening, and a chart recording of the body temperature and reactions was confirmed by interview. All subjects who had eruptions and fever were seen by the author. Eight children had a temperature of over 37.5 C, in each case about one week after vaccination. The serological response, assayed by the IAHA test, was positive in all 524 children examined and the cellular immune response, assayed by the vari-

cella skin test, was also positive in 435 of the 524 children (Table 2).

2. Protective effect of vaccination

Of the 854 children who could be followed,

TABLE 1. Clinical symptoms in three weeks after vaccination

Age	Case	Fever (over 35.5 C)	Rash		Others
			(allergic)	(vesicle)	
0	41	0	0	0	1 ^a
1	108	3	1	1	0
2	136	1	1	0	0
3	202	1	1	1	0
4	185	2	2	1	0
5	146	1	0	2	0
6	97	0	0	0	0
Total	915	8	5	5	1

^a Diarrhea.

TABLE 2. *Immunological response after varicella vaccination in normal children*

Age group	Antibody response (LAHA)	Mean antibody titer	Skin test reaction
0	10/10	22.6	7/10
1	84/84	23.1	68/84
2	118/118	23.0	92/118
3	185/185	22.8	164/185
4	74/74	23.2	58/74
5	42/42	23.4	38/42
6	11/11	23.1	9/11
	524/524 (100%)	23.0	435/524 (84.7%)

TABLE 3. *Cases of clinical varicella infection in vaccinated normal children*

Age	0-1	1-3	4-5	>5	Sub-total
Year					
1978	—	0/10	0/21	—	0/31
1979	—	0/41	0/24	0/5	0/70
1980	0/2	1/87	0/51	0/20	1/160
1981	0/18	3/92	0/69	1/34	4/213
1982	0/21	3/180	2/143	0/36	5/380
Total					10/854

Zoster herpes; 1/854

Occasions of contact: 602

602 children had occasions of contact with varicella patients, but only 10 of them developed extremely mild varicella with slight rashes. The number of rash was 10 to less than 20 in all 10 cases. All rashes were superficial with quick recovery (Table 3).

Zoster occurred in very mild form in only one case who was admitted to hospital with mycoplasma pneumonitis.

Formerly vaccines were used only for highly infectious diseases with poor prognosis for which no effective treatment was available. Lately, infectious diseases causing serious to

health have disappeared because of improved public health, improved nutrition and the development of excellent preventive methods. But with changes in the social environment and altered values, vaccines are now required even for diseases with a favorable prognosis, when the social need is great.

Chickenpox is usually not a serious disease in normal children. However, nowadays the communal life of children begins earlier since the children are sent to nursery school. Moreover in many cases both parents work outside the home, and so it is difficult for them to look after sick infants and young children at home when the children are prohibited by school health laws from attending school or nursery school because of chickenpox.

In addition, school children find it difficult to catch up with school work after an absence from school of as long as 10 to 14 days because of sickness.

Therefore, an attack of chickenpox regardless of the prognosis, may cause many problems. Accordingly I believe that this vaccine should be routinely to immunize healthy children and that this series studies should be continued. Though in the present study the number of vaccinated children was not large, the following conclusions can be drawn from the results.

- 1) There is no problem with regard to the safety of this vaccine or the immune response to it in normal children.
- 2) The incidence of clinical reactions to the vaccine is only 1% and these are not infectious to others.
- 3) Exogenous clinical varicella infection occurs at a rate of 1% to 2% in the vaccinees, but the resulting symptoms are mild by virtue of the immunity achieved by vaccination.
- 4) Zoster is very rare in vaccinated normal children.