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OUTBREAKS OF SMALLPOX DURING 1968 IN SOME VILLAGES OF JAIPUR DISTRICT, RAJASTHAN

by

S. Pattanayak, P. N. Sehgal and N. G. S. Raghavan,
National Institute of Communicable Diseases, Delhi

Introduction

During November 1968, outbreaks of smallpox introduced by nomads occurred in several villages of Jaipur District, Rajasthan. Outbreaks in two villages were investigated by a team from the National Institute of Communicable Diseases, Delhi. The present communication describes these outbreaks, both of which illustrate the necessity for more effective surveillance and containment measures.

Background

In November 1968, the villages of Saiwara (population 2100) and Nathawala (population 980), 45 miles and 42 miles respectively from Jaipur city, experienced outbreaks of smallpox. Both villages are on an all-weather road and their populations had been vaccinated under the National Smallpox Eradication Programme. Work was started in the State of Rajasthan in January 1963 and by May 1964, all districts of the state had been vaccinated. The programme was reorganized in June 1966 and the staff of the programme merged with the existing District Health Organization for maintenance vaccination activities. Five epidemic squads were formed and assigned to the divisional headquarters to strengthen containment activities.

Amarsar is the primary health centre for the two villages which reported cases and is located about eight miles from Saiwara. One sanitary inspector to direct the smallpox work and two vaccinators, each responsible for a population of 40 000, are under the supervision of the medical officer of the primary health centre. The vaccinator for Saiwara and Nathawala has his headquarters at Shahpura, about five miles from Saiwara and is assisted by one woman health visitor from the primary health centre and three auxiliary health workers, and three auxiliary nurse-midwives at the sub-centres.

Each vaccinator is expected to keep separate records for migrant populations and to vaccinate them when he encounters them. He issues a vaccination certificate to the head of the group.

Freeze-dried smallpox vaccine is sent to the primary health centre every fortnight by post and is store there in refrigerators. It is obtained by special messenger in case of emergency.

System of Notification

When a smallpox case is suspected, parents inform the Panchayat of the village who advises the medical officer of the primary health centre. There is also a provision that the Gram Panchayat should notify the occurrence of the disease to the block development officer who in turn is to report to the appropriate primary health centre. In addition, pink notification

cards have been supplied to health workers in rural areas to permit notification by post directly to the district health officer. In case of a smallpox outbreak, the medical officer in charge of the dispensary is to notify the cases and to supervise control measures.

Incidence of smallpox in previous years

No records are available regarding incidence of smallpox and extent of vaccination in these two villages during previous years. However, it is recorded that during 1968, there were 268 reported cases of smallpox in the district and, in that year, 5.5 per cent. and 26.8 per cent. of the district's population were given primary vaccination and revaccination respectively.

History of the outbreak in Saiwara Village

In mid-November 1968, a party of "Gaudion Lhuar" from Sikar district arrived at Saiwara and camped in the village in front of the Government dispensary. "Gaudion Lhuar" make agricultural tools for the villagers. They move from village to village in bullock carts and camp in each for an average of three to four weeks.

In the group which visited Saiwara, there were said to be two cases of smallpox which occurred about the time of their visit. They stayed at Saiwara for eight days but were forced to leave at the demand of the villagers.

The first case in Saiwara was reported on 18 December and, at the time of investigation in late January, 13 cases and five deaths had been notified. The investigation team, however, in a house to house survey, detected 40 cases, eight of whom had died (Table 1).

The weekly dates of onset of cases are shown below.

Number of cases in week ending:

23 Nov.	30 Nov.	7 Dec.	14 Dec.	21 Dec.	28 Dec.	4 Jan.	11 Jan.	18 Jan.	25 Jan.
1	1	0	0	7	7	9	7	6	2

Twenty-four affected families had only a single case each; six had two cases; and one family, four.

Between 18 and 21 December, immediately after notification of the outbreak, 37 primary vaccinations and 121 revaccinations were performed. Additional containment activities were conducted between 9 and 19 January during which 252 primary vaccinations and 948 revaccinations were administered.

To assess the vaccination status of the population, a scar survey of the persons present at the time of visit was carried out. Of a total population in the village of 2100 persons, only 782 (37.2 per cent.) could be examined (Table 2).

Almost 10 per cent. of those examined bore pock marks of smallpox, including 8.2 per cent. of the 488 children under the age of 15 years. Despite the containment activities, 8.3 per cent. of the population seemed to have remained unprotected.

Outbreak in Nathawala village

The first case reported from Nathawala occurred on 25 December and totally four cases with no deaths had been notified.

A house to house survey was done and 12 cases with three deaths were detected (Table 3). Eleven of the 12 cases were unvaccinated at the time of exposure. The one case previously vaccinated had received primary vaccination nine years before and had been revaccinated during the incubation period. All cases were less than 14 years of age.

Of the three who died, none had been vaccinated before exposure; one was vaccinated during the incubation period.

The weekly dates of onset of the cases are shown below.

Number of cases in week ending:

23 Nov.	30 Nov.	7 Dec.	14 Dec.	21 Dec.	28 Dec.	4 Jan.	11 Jan.	18 Jan.
-	-	1	-	-	2	4	3	2

One family had one case, four families had two cases, and one family had three cases.

During 18-21 December, 22 primary vaccinations and 16 revaccinations were done, and from 9 to 19 January, 105 primary vaccinations and 307 revaccinations were performed.

To assess the vaccination status of the population a scar survey of persons present at the time of visit was carried out. Of the total population of 980, only 337 could be examined (Table 4).

Of 195 children up to 14 years, 1.5 per cent. had pock marks; 13.9 per cent. had no vaccination scars or pock marks. Among all age groups 12.2 per cent. had no vaccination scar or pock marks.

Discussions

Nomads quite often present a problem in the eradication of communicable diseases. The nomads of the type described here (Gaudian Lhuar's) are of particular importance, since their pattern of living brings them very close to village populations. The movement of the epidemic from one village to the other followed the movement of the "Gaudian Lhuars". In the course of the investigation, efforts were made to locate this group. They were traced to an open space on the main road between Jaipur and Shahapur. Because they had been chased out of the two villages, they camped in an open area away from the villages. However, villagers were still coming to them to obtain agricultural tools. Mostly adult villagers came and, thus, the chance for younger, more susceptible children to come in contact was remote. The party of nomads consisted of 45 persons, when contacted; there were no active cases but two had recent scars of smallpox. Only a few older persons bore vaccination scars.

In view of delayed reporting of notifiable diseases, most epidemics are investigated long after the epidemic has subsided, but the present investigations were carried out just at the termination of the outbreaks.

That the vaccination status in the two villages investigated was inadequate was evident from the fact that 416 primary vaccinations were performed between 18 December and 19 January in a population of 3080 persons in the two villages. Even after containment measures had been taken, 10 per cent. of the residents remained unprotected.

It is apparent that the initial inadequate control measures had no effect in terminating the outbreaks whereas later, more intensive measures, when instituted, were immediately effective. It is noted that in each village, only one or two cases occurred initially and after two to three weeks time larger numbers developed. Had the first cases been notified promptly and appropriate control measures instituted, the epidemic could have been averted.

Although there were three recommended methods for notification of smallpox cases in the villages investigated, only 32.5 per cent. were notified in Saiwara and 33.3 per cent. in Nathawala. There is, therefore, an urgent need for improved smallpox surveillance including prompt case detection, reporting, epidemiological investigation, cross notification and immediate institution of containment measures.

TABLE 1. SMALLPOX CASES - SAIWARA VILLAGE

Age	Number of cases			
	Total	Vaccinated before exposure	Unvaccinated	Unknown
< 1	1	0	1	0
1-5	26 (7)	3 (1)	21 (5)	2 (1)
6-14	12 (1)	4	7 (1)	1
15 +	1	1	0	0
Total	40 (8)	8 (1)	29 (6)	3 (1)

( ) Number of deaths

TABLE 2. SMALLPOX SCAR SURVEY IN SAIWARA, 22 JANUARY 1969*

Age group	Percentage of total		
	Pock marks (with or without vacc. scar)	Vaccination scar present	No scars of vaccination or pock marks
Below 1 year	1.6	85.7	12.7
1-5 years	5.9	88.5	5.4
6-14 years	11.3	86.7	1.9
15 years and above	11.6	73.8	14.6
Total	9.5	82.2	8.3

* This includes some of the population who were given primary vaccination between 18 December and 19 January.

TABLE 3. SMALLPOX CASES - NATHAWALA VILLAGE

Age	Number of cases		
	Total	Vaccination before exposure	Unvaccinated
< 1	1	0	1
1-5	6 (2)	0	6 (2)
6-14	5 (1)	1	4 (1)
15 +	0	0	0
Total	12 (3)	1	11 (3)

( ) Number of deaths

TABLE 4. SMALLPOX SCAR SURVEY IN NATHAWALA VILLAGE, 22 JANUARY 1969*

Age	Percentage of total		
	Pock marks (with or without vacc. scar)	Vaccination scar present*	No scars of vaccination or pock marks
Below 1 year	0.0	61.9	38.1
1-5 years	0.0	77.0	23.0
6-14 years	3.0	95.0	2.0
15 years and above	2.8	87.4	9.8

* This includes some of the population who were given primary vaccination between 18 December and 19 January.