



INTERNATIONAL COMMISSION FOR THE ASSESSMENT  
OF SMALLPOX ERADICATION IN PAKISTAN

VARIOLATION IN PUNJAB

by

Dr. Ch. Ismat Ullah<sup>1</sup>

Variolation was banned in Punjab in 1887 when the British Government enforced the Vaccination Act. But unofficially it continued in remote parts of Punjab. In Rahimyar Khan District, Tehsil Sadiqabad and Village Garhi Baghar, it was practised until 1973-74 by a tribe called Dhukkars. Their areas of variolation were mainly the borders of Punjab with Sind and Baluchistan, the riverine belt between Rahimyar Khan District and Dera Ghazi Khan, and the desert of Bahawalpur Division (Cholistān), i.e. areas where there were either no vaccinators or which were difficult for vaccinators to reach. Variolation in these areas was further limited to the local population (i.e. Saraiyki, Baloch and Rohilas) and has never been practised among settlers. This local population believes in the mythology that there is always a phased series of disease calamities, i.e. typhoid is followed by measles, after which chickenpox appears and, last, an epidemic of smallpox. The variolators command respect among the local population. They are considered as saints/physicians and are accustomed to receive gifts as well as money for variolation.

VARIOLATION SEASON

Normally, variolation is performed between mid-February and mid-May. In addition, whenever there are cases with rash in the locality, they are invited to perform a special "containment variolation".

METHODOLOGY

Material used for variolation are scabs collected from a case of smallpox. The variolators collect the material from the least severe cases and grind the scabs in human milk. The fluid is applied on the medial side of the wrist joint with a stick. Then multiple punctures are performed by pricking the skin with a number of needles tied together in a bundle.

The variolators were traced and material was collected from them in 1975 (Tables 1 and 2).

INVESTIGATIONS IN THE VARIOLATION AREAS

Special operations in the variolation areas were carried out during the first half of 1975:

- extensive and thorough surveillance in the area was conducted to detect possible cases of smallpox or active variolation;
- variolation material was collected from all variolators;
- efforts were made to convert variolators into vaccinators: two were given jobs as vaccinators and all were provided with vaccine and needles;
- Health education was conducted to explain to local people the dangers of variolation.

<sup>1</sup> Provincial Smallpox Surveillance Officer (Punjab), Lahore

The Provincial Smallpox Surveillance Officer, along with the teams, paid frequent visits to the area and to the variolators from January 1975 to April 1975. At the end of April, eight provincial Assistant Superintendents Vaccination and 14 vaccinators, along with four cars and eight motorcycles, were shifted to that area for intensive surveillance in the riverine and bordering areas. Local staff were also involved, including one Assistant Superintendent Vaccination and eight vaccinators from Rahimyar Khan District and one Assistant Superintendent Vaccination and six vaccinators from Dera Ghazi Khan.

The search operation was supervised by the WHO Adviser, the Provincial Smallpox Eradication Officer, Provincial Smallpox Surveillance Officer, the Deputy Director of Health Services, Bahawalpur and the District Health Officers of Rahimyar Khan and Dera Ghazi Khan. A total of 145 suspected cases were detected, of which 75 were chickenpox and none was smallpox (Table 3). No active variolator or recently variolated person was detected.

#### ROUTINE SURVEILLANCE

Routine surveillance was continued in the variolation areas of Rahimyar Khan and Dera Ghazi Khan, with special emphasis on watching for variolation activity and search for suspected cases. The two variolators appointed for vaccination were attached to two local vaccinators for supervision, with the thought that if an outbreak occurred, the variolator might first receive the information.

#### SPECIAL SURVEILLANCE

Another round of special search was carried out in the riverine area of Rahimyar Khan and Dera Ghazi Khan and the desert (Cholistan) of Bahawalpur division, during February to April 1976.

One team consisting of one provincial Assistant Superintendent Vaccination and one local Assistant Superintendent Vaccination on a motorcycle was deputed to search the riverine area of Dera Ghazi Khan from 10 to 27 February 1976. Another team consisting of one provincial Assistant Superintendent Vaccination and one local Assistant Superintendent Vaccination searched the bordering/riverine area of Rahimyar Khan from 9 to 25 February 1976. Two teams in two vehicles consisting of two provincial Assistant Superintendents Vaccination, six provincial vaccinators, two local vaccinators and two guides searched the desert of Bahawalpur from 14 to 29 February 1976. Two teams of one local Deputy Superintendent Vaccination, two local vaccinators, one provincial Assistant Superintendent Vaccination and three provincial vaccinators in two jeeps led by the Provincial Smallpox Surveillance Officer were sent into the desert of Rahimyar Khan and Bahawalnagar.

All these operations were supervised by the District Health Officers concerned and the Provincial Smallpox Surveillance Officer.

Thirteen suspect cases were reported, of which 12 were chickenpox. No case of smallpox was discovered and no evidence of recent variolation. The results of these operations are summarized in Table 4. Data on variolation scars are shown below:

| Area        | District        | Persons checked | Variolated (%) | Variolated Age Group          |     |      |     | Total |
|-------------|-----------------|-----------------|----------------|-------------------------------|-----|------|-----|-------|
|             |                 |                 |                | <2                            | 2-4 | 5-14 | 15+ |       |
| Riverine    | Dera Ghazi Khan | 9 075           | 59 (0.7)       | -                             | -   | 4    | 55  | 59    |
|             | Rahimyar Khan   | 294             | 48 (16.3)      | -                             | -   | 3    | 45  | 48    |
| Total       |                 | 9 369           | 107 (1.2)      | -                             | -   | 7    | 100 | 107   |
| Desert      | Rahimyar Khan   | 311             | 223 (72.0)     | -                             | 2   | 36   | 185 | 223   |
|             | Bahawalnagar    | 586             | 51 (8.7)       | -                             | -   | -    | 51  | 51    |
|             | Bahawalpur      | 2 037           | 173 (8.4)      | (Team omitted recording ages) |     |      |     |       |
| Total       |                 | 2 934           | 447 (15.0)     | -                             | 2   | 36   | 236 | 274   |
| Grand Total |                 | 12 303          | 554 (4.5)      | -                             | 2   | 43   | 336 | 381   |

A study of the data given above indicates that 4.5% of the population in these areas has been variolated. The desert of Rahimyar Khan, Bahawalpur and Bahawalnagar is unstaffed and there are no government vaccinators in that area. The variolators thus operate freely there and that is why the percentage of persons variolated is as high as 15% in the desert while it is only 1.2% in the riverine areas. The most recent variolation observed in Punjab was in Rahimyar Khan desert and was carried out in 1973 by Murkin Fakir and Nawab Fakir, and was a routine variolation not related to any outbreak of smallpox. Variolator Dadan carried out variolation in 1974 at Goth Bhuttey, near Dharki, Sukkur district, Sind, and this was containment variolation for an outbreak of six cases from which he also collected the scabs of smallpox cases for his variolation material.

The age group distribution reflects the gradual decrease in variolation activities with time, i.e. 88% of the variolated persons are adults, 11.3% are in the age group 5-14 years, while only 2 children are less than 4 years of age. The fact that no child under 2 years was found variolated is an indication that:

- i) there have been no variolation activities in these areas for the last two years;
- ii) no outbreak occurred in the variolation area during the last two years.

#### HEALTH EDUCATION

The health education took various forms.

##### For the variolators

1. They were told the advantages of the use of vaccine and disadvantages of the use of variolation material.
2. Local District Administration personally persuaded them to change from variolation to vaccination.
3. Religious and local leaders were convinced of the advantages of the use of vaccine.
4. Two were given jobs as vaccinators.

##### For the population

The provincial teams along with their surveillance activities:

1. addressed public gatherings in the localities visited;
2. convinced tribal heads and other community leaders of the desirability of vaccination;
3. distributed 5 000 leaflets and posters.

CONCLUSION

Variolation, once a popular practice, is completely suspended now. The local people are losing interest in the practice because they no longer feel threatened by smallpox. The abandonment of the practice is further proof of the absence of smallpox.

VARIOLATORS OF PUNJAB

TABLE 1

| Name of Variolator      | Age Years | Address   | Area of Variolation                                | If still active | Profession              |                        | Material Collected | Remarks                                    |
|-------------------------|-----------|---|--|-----------------|-------------------------|------------------------|--------------------|--|
|                         |           |   |  |                 | Past                    | Present                |                    |  |
| 1. Dadan s/o Musso      | 56        | Garhi Baghar, Tehsil Sadiqabad, District Rahimyar Khan                | Rahimyar Khan, Dera Ghazi Khan (Pb), Sukkur (Sind) | Yes             | Variolation             | Employed as vaccinator | Yes                | Performed variolator up to 1974            |
| 2. M. Yar s/o Musso     | 52        | Perm: Garhi Baghar<br>Temp: Chak 22/P<br>(Sadiqabad)                  | Rahimyar Khan                                      | No              | Variolation             | Farming                | No                 | -  |
| 3. Ahmad Din s/o Musso  | 47        | "   | Rahimyar Khan                                      | No              | Variolation             | Farming                | No                 | -  |
| 4. Bukhta               | 80        | Garhi Baghar  | Desert of Cholistan and Rajputana                  | Yes             | Variolation             | -                      | Yes                | -  |
| 5. Allah Dad s/o Bukhta | 39        | Garhi Baghar  | Riverine belt of Rahimyar Khan                     | No              | Variolation and farming | (Tenant)<br>Farming    | No                 | -  |
| 6. M. Ali s/o Bukhta    | 35        | Garhi Baghar  | Desert of Cholistan and Rajputana                  | Yes             | Variolation             | Employed as Vaccinator | Yes                | Worked as assistant to his father 4. above |
| 7. Amirun s/o Abdul     | 52        | Garhi Baghar  | Dera Ghazi Khan and Rahimyar Khan                  | Yes             | Variolation             | Landowner              | No                 |  |
| 8. Fazal s/o Miha       | 48        | Garhi Baghar  | Dera Ghazi Khan and Rahimyar Khan                  | Yes             | Variolation and farming | Landowner              | Yes                | -  |
| 9. Murkin Fakir         | 60        | Nomadic. Originally from Garhi Baghar. Stays at Chak 22/P             | Cholistan Desert and Sind Province                 | Yes             | Variolation             | -                      | Yes                | Performed variolation up to 1973           |
| 10. Nawab Fakir         | -         | Nomad in desert. Presently rumoured to be in Khairpur District (Sind) | Cholistan Desert and Sind Province                 | Yes             | Variolation             | -                      | No                 | -  |

TABLE 2

SUMMARY OF TESTING RESULTS FOR VARIOLATION SPECIMENS  
PUNJAB, PAKISTAN

| Name of Variolator | Specimen No. | Type of Specimen | Date of Laboratory testing | Age of Specimen | Results             |                      |                         | Testing Laboratory |
|--------------------|--------------|------------------|----------------------------|-----------------|---------------------|----------------------|-------------------------|--------------------|
|                    |              |                  |                            |                 | Electron Microscopy | Precipitation in gel | Variola virus Isolation |                    |
| 1. Dadan Khan      | Punjab 75/7  | Scabs            | April 1975                 | 12 months       | Not done            | Not done             | -                       | London             |
| 2. Bukhta          | Punjab 75/12 | Scabs            | April 1975                 | 4 years         | +                   | +                    | -                       | Atlanta            |
| 3. Fazal s/o Miha  | Punjab 75/15 | Scabs            | June 1975                  | 2 years         | +                   | +                    | -                       | Atlanta            |
| 4. Muskin Fakir    | Punjab 75/16 | Scabs            | June 1975                  | Not known       | herpes              | -                    | -                       | Atlanta            |

TABLE 3

RESULTS OF SURVEILLANCE IN VARIOLATION AREAS BY PROVINCIAL  
AND LOCAL STAFF, PUNJAB, PAKISTAN - 21 APRIL TO 28 MAY 1975

|                          | Dera Ghazi Khan | Rahimyar Khan |
|--------------------------|-----------------|---------------|
| Villages investigated    | 92              | 252           |
| Schools                  | 28              | 156           |
| Health Centres/Hospitals | 7               | 13            |
| Private practitioners    | 20              | 124           |
| Bus Stands               | 17              | 13            |
| Police Stations          | 4               | 8             |
| Shops                    | 289             | 1 061         |
| Houses checked           | 10 298          | 7 677         |
| Villagers interrogated   | 11 061          | 1 206         |
| Suspected cases          | 5               | 140           |
| Chickenpox               | 5               | 70            |
| Measles                  | -               | 55            |
| Primary vaccinations     | 468             | 7 523         |
| Revaccinations           | 1 938           | 22 664        |

TABLE 4

SPECIAL SURVEY REPORT OF DESERT AREA, PUNJAB, PAKISTAN

| District      | No. of persons visited | No. with Vaccination scar | No. with Variolation scar | No. with pockmarks | No. who knew of reward |
|---------------|------------------------|---------------------------|---------------------------|--------------------|------------------------|
| Bahawalpur    | 2 037                  | 1 309 (64%)               | 173 (8%)                  | 276 (13%)          | 110 (5%)               |
| Rahimyar Khan | 311                    | 72 (23%)                  | 223 (72%)                 | 9 (3%)             | 3 (1%)                 |
| Bahawalnagar  | 586                    | 366 (62%)                 | 51 (9%)                   | 63 (11%)           | 3 (0.5%)               |
| Total         | 2 934                  | 1 747 (59%)               | 447 (15%)                 | 348 (12%)          | 116 (4%)               |