SIMULTANEOUS SMALLPOX AND B.C.G. VACCINATION IN INDONESIA

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The simultaneous smallpox and BCG vaccination was first launched in April 1972 in Jawa-Bali islands (excluding Jakarta). Smallpox vaccine was given on the left upper arm using a bifurcated needle, while at the same time BCG was applied on the right upper arm using the conventional BCG syringe. These vaccinations were performed by the already available smallpox vaccinator, nearly in every sub-district throughout Indonesia in conjunction with the Smallpox Eradication Program started in 1968. Previously BCG was given by a Health Centre staff, which due to the work load, could only cover its vicinity, and sweeping performed by a special team. Prior to this, two trials had been conducted. The first one was conducted by Rivai et al. in 1971 in West Jawa, to assess the efficacy of both vaccines being administered simultaneously, while the second one in January 1972 (Central and East Jawa, Yogyakarta) to assess the capability of the smallpox vaccinators in performing BCG vaccination and difficulties encountered in the filed. Both trials were considered satisfactory. In April 1973, the program was extended throughout Indonesia gradually so that by the end of 197 all provinces could be covered. This paper deals only with the program in Java and Bali islands (population approximately 8 millions), where the implementation has reach its second year.

MATERIALS AND METHODS

The smallpox vaccine is the freeze dried of produced by Bio Farma, with a potency of least 10^8 pocks forming unit per ml, while BC

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Vaccine is Japanese made donated by Unicef containing 5 mg BCG per 10 cc or 2.5 mg per 5 cc. Bifurcated needle was used for smallpox vaccination and BCG syringe for BCG vaccination on the left and right upper arm respectively. The simultaneous smallpox and BCG vaccinations were performed by 2,402 smallpox vaccinators stationed in the sub-districts. The target was to vaccinate the 0 - 1 yr group (primary vaccination for smallpox) and the 12 - 13 yrs group (revaccination for smallpox). For BCG, these two age groups valid only for the primary vaccinees. Previously, the target was 0 - 14 yrs for both vaccinations. Routine smallpox vaccination in 1970 (Koswara) was considered only as supplement to the eradication of smallpox, after it was proved that surveillance-containment measures alone could lead smallpox incidence to zero in September 1971. Further, research in other countries revealed that immunity conferred after successful primary vaccination is far beyond 5 years; 10 years is probably the most agreeable figure, while after revaccination is almost certainly extending to 20 yrs or more (Henderson, 1971). Therefore smallpox vaccination given twice during one's life would not hamper the eradication of smallpox. (primary vaccination in the 0 - 1 yr group and revaccination in the 12 - 13 yrs instead of every three years). From BCG vaccination point of view, those two age groups mentioned above are the most susceptible ones to contract tuberculosis. In each sub-district in Jawa and Bali, each smallpox vaccinator had to move around his area within a certain period (a cycle), so that by that period he would arrive at the place where he started. Each cycle was further divided into a primary and revaccination cycle. Vaccinations were done at several collecting points depending on the number of population served.

RESULTS

The results of smallpox and BCG vaccination from 1969 to 1972 are given below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Smallpox vaccination (in million)</th>
<th>B.C.G. vaccination (in million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P.V.</td>
<td>R.V.</td>
</tr>
<tr>
<td>1969</td>
<td>3.5</td>
<td>19.3</td>
</tr>
<tr>
<td>1970</td>
<td>2.6</td>
<td>16.9</td>
</tr>
<tr>
<td>1971</td>
<td>2.8</td>
<td>11.6</td>
</tr>
<tr>
<td>1972</td>
<td>2.5</td>
<td>4.6</td>
</tr>
</tbody>
</table>

P.V. = primary vaccination  
R.V. = revaccination

DISCUSSION AND CONCLUSION

The simultaneous smallpox and BCG vaccination came into being after the following considerations: The workload of smallpox vaccinators after the change of the target was reduced considerably, thereby addition of another antigen would be reasonable; The target of smallpox and BCG vaccination was the same (0 - 1 yr and 12 - 13 yrs); The output of the smallpox vaccinators in performing BCG could be higher as compared to the previous BCG vaccinators, owing to the increased number of working days and a more generous ability to travel through their areas; Time, money and manpower saving.

Among the difficulties encountered were: Collecting children to be vaccinated, Irregular supply of BCG vaccine by Unicef, Storage of BCG vaccine where ice was a problem (BCG can be stored for 2 weeks only outside the refrigerator). Despite these difficulties the result is encouraging. As can be seen from the above table, BCG out-put in 1972 is 10.3 millions while the figure for 1971 is only 2.4 millions. This means a 4.3 fold increase of out-put. Smallpox vaccination itself has a tendency to decrease in out-put especially in primary vaccination, this may well be due to the difficulty encountered in doing a house to house vaccination, as BCG does not permit to do so.

SUMMARY

A simultaneous smallpox and BCG vaccination in Indonesia (with emphasis in Jawa and Bali) has been reviewed. It started in April 1972, using smallpox vaccinators (2,402) already available in Jawa-Bali in conjunction with the
smallpox eradication program. During the first year of its implementation, encouraging results were observed where the BCG output was 4.3 times higher than the output of the previous year. Based on this observation the programme was extended throughout Indonesia in April 1973. Care was taken to overcome the difficulties encountered, in order to achieve successful results.

ACKNOWLEDGEMENTS

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REFERENCES