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CONTRIBUTION OF THE FRENCH TERRITORY OF THE AFARS AND ISSAS (TFAI) TO SMALLPOX CONTROL IN EAST AFRICA

by

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Now that a global smallpox eradication programme has been undertaken by WHO, the author would like to describe the features of smallpox control, in the French Territory of the Afars and Issas in East Africa. Although now free from smallpox, the Territory, because it borders on Ethiopia where the disease is endemic, in the recent past experienced two epidemic outbreaks. The virus is introduced by pastoral nomads who are difficult to control and who constitute the chief difficulty in the campaign against smallpox.

The 23 000 square kilometres of the Territory is spread around a deep gulf and appears on a map almost as an enclave of the giant neighbouring country of Ethiopia. A common border is also shared with Somalia. Although almost completely desert, the Territory is of epidemiological interest because of the currents of human migration which cross it and converge on Djibouti, the only town which is an international port and airport and is connected by rail to Addis Ababa, the capital of Ethiopia. No less important are the incessant migrations of nomadic tribes in the interior: Afars in the north, Issas in the south. Not subject to any check and ignoring frontiers, these shepherds go from one source of water to another, their movements being governed by the rainfall which produces meagre pasturage soon exhausted by their flocks of goats. In this way they provide permanent epidemiological contacts between the populations of the Territory, of Ethiopia and of Somalia. These conditions explain the importance of smallpox prevention in the region, where the aim of the programme is to maintain a high level of immunity in the population and to track down any suspect case of the disease.

Epidemiological situation during the last 10 years

There were two epidemic outbreaks in the southern half of the Territory in 1959 and 1966, respectively. They originated from the movements of nomads carrying smallpox which they picked up in endemic Ethiopia.

In 1959 the alarm was given by a case discovered in the native quarters of Djibouti. Subsequently in September and October, 109 other cases were found, spread along a north-south geographical axis leading to the Ethiopian source of the disease. In all, 110 cases occurred with 13 deaths, i.e. a case fatality ratio of 11.8 per cent.

After six years, the second epidemic occurred in February 1966 - slightly more to the west. There were 52 cases with six deaths (case fatality ratio of 11.5 per cent.), the majority grouped around the built-up area of Dikhil. The primary case came from the Ethiopian province of Harar, where smallpox cases had occurred in January. Since the ensuing vaccination campaign which was undertaken throughout the Territory, no cases have been observed. The country may thus be regarded as free from the disease.

Following the outbreak of 1966, two approaches to smallpox control appeared possible: epidemiological surveillance, which was facilitated by the presence of health centres in the four built-up areas of the interior; and periodic vaccination campaigns to maintain the

immunity of the population. Local conditions are such as to favour the practice of the two methods in combination, for the small population facilitates vaccination campaigns while surveillance is also necessary because of the nomadic tribes which, to some extent, escape vaccination.

Vaccination campaign

The population of Djibouti (about 60 000) was vaccinated in January and February 1969. In the interior, the campaign continued until April. Thus vaccination was carried out in the cool season permitting open air sessions and the movement of teams in the field.

The campaign was at first discussed at length in the local press and in radio and television broadcasts so as to make known its usefulness, aims and organization. The freeze-dried vaccine came from the Vaccine Institute of Dr Pourquier, Montpellier, France. Vaccination was performed by making a single 4-6 mm scarification through a drop of vaccine on the outer surface of the arm.

Vaccination in Djibouti

Vaccination was administered both in fixed centres and by mobile teams which went to the schools and to public services with large staffs. Through the district chiefs, the press and the radio, each district of the town was invited to a given centre at a chosen time for vaccination. Every vaccinated person received a vaccination card bearing his right thumb print for purposes of identification. These cards enabled vaccinees both to be dealt with quickly and upon presentation of their cards to obtain an international vaccination certificate.

Results

From the very first days the population crowded into the centres where officials had difficulty in keeping order. There were several reasons for this:

(a) memories of the epidemic in 1966;

(b) fear that there would not be enough vaccine for everyone;

(c) the unexpected success of the vaccination cards, which were regarded by the inhabitants as identification papers because of the thumb print.

This massive influx caused crowding round the staff responsible for issuing the cards after vaccination. Vaccination centres moving to each quarter in succession might perhaps avoid such confusion.

Although vaccination is a simple medical act is nevertheless calls for supervision of the vaccination teams' technique. The presence of a doctor was necessary for this supervision as well as for the rapid solution of many small, unforeseen problems that might have arisen. The doctor's presence was also a stimulus - to vaccinate for hours and days in the midst of noise, heat and dust is a tiring and demanding task.

Vaccination in the interior of the Territory

The population in the interior is a mixture of sedentary elements living in communities with 1000 - 2000 inhabitants, and nomadic encampments with only a few score persons. A fixed centre performed vaccination in each community, while the camps were vaccinated by mobile teams. Preliminary contacts with the chiefs were essential to fix a rendezvous and to overcome the reluctance of certain fractions of the population.

Results

The south of the Territory, where the Issas dominate, is poor in water and pasture resources. Most of the tribes are thus compelled to lead a predominantly nomadic life. In the dry season they leave the Territory and cross the Ethiopian frontier. Because of this they were only partly covered by the vaccination campaign. This explains why the Issas are the most important vectors of smallpox virus (it is in the area that the two epidemic outbreaks of 1959 and 1966 occurred), and, further, why there is a need for co-ordinated action by the countries they pass through. Until this is achieved, special surveillance is required.

The north of the Territory, inhabited by the Afars, is more mountainous and access to it is difficult. The nurse-vaccinator accompanied by a guide, made his tours of duty on foot, the equipment being carried by a dromedary. There was a slow advance from camp to camp over the course of weeks, with at best 100 vaccinations daily. Nevertheless, the coverage of the Afars was more complete. Water sources and vegetation are more plentiful in their area so that nomadism is more limited and takes place completely within the Territory. As the campaign occurred at a favourable climatic period, the vaccination campaign reached the tribes in their main camping area, which they leave only in summer for better watered regions in the north.

General results

The large nomadic element in the population of the Territory renders a precise evaluation of coverage impossible. Of the population estimated at 100 000, 87 183 persons in all were vaccinated during the campaign, which excluded all persons in Djibouti vaccinated within the previous three years. The effectiveness of vaccination was assessed by random sample in the schools. Post-vaccinal reactions were noted after an interval of a week in hearly 3500 subjects. The proportion of successful vaccinations (major reactions) was 96 per cent. among primary vaccinees and 75.5 per cent. among revaccinees.

No complications of vaccination were encountered.

Surveillance

In the interior of the Territory, surveillance is ensured by health centres, directed by a medical officer, which exist in the four main built-up areas. These centres are linked to the hygiene services in Djibouti, to which they regularly send reports of their activities.

Vaccination checks are made at the frontier posts, on the railway and the trail connecting Djibouti to Somalia.

In Djibouti, travellers arriving at the port and the airport are checked for smallpox vaccinations. In the case of patients with suspicious skin eruptions a sample is taken and sent to the microbiological laboratory of the Peltier Hospital where it is studied by agar gel precipitation in the presence of anti-vaccinal immune serum. Part of the sample is also sent to the International Public Health Laboratory, Paris, for identification of the causative organism.

Maintenance vaccination

Between campaigns, vaccination continues in the interior of the Territory in the health centres, and at Djibouti in the hygiene service.

Smallpox vaccination is required for enrolling children in school and for obtaining certain administrative documents, such as identity cards, occupational health cards, etc. Finally, part of the indigenous population of Djibouti requests vaccination before leaving in the summer for Ethiopia or Somalia.

Conclusion

Smallpox control in the French Territory of the Afars and Issas, which is made easier by reason of the small population, employs a range of measures: vaccination campaigns every three years, epidemiological surveillance, and maintenance vaccination so as to ensure a high level of immunity in the population. This collective immunity represents a barrier to the spread of the smallpox virus that a mobile fraction of the population is liable to introduce at any time. Complete control of the latter fraction will only be ensured by joint action with the bordering countries.