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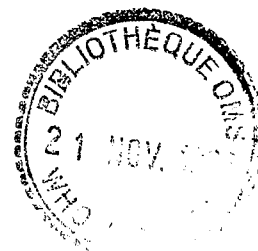
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AN OUTBREAK OF SMALLPOX IN CHINGLEPUT DISTRICT, MADRAS

by

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Introduction

A single case of smallpox, voluntarily admitted to the Infectious Disease Hospital, Madras, was responsible for the discovery of a major outbreak which had been raging for five months in a group of villages near Mangadu, Sriperumbuthur Taluq, Chingleput District. This outbreak, otherwise, would have gone undetected, since the public health staff was unaware of the occurrence of smallpox cases in these villages.

When the Indian Council of Medical Research Unit proceeded to the spot in June 1968, the epidemic had almost subsided. There were no active cases except for five or six patients who still had scabs. All the surviving patients had completely recovered with permanent pitting scars. The late recognition of the epidemic has made it impossible to determine accurately the onset dates of individual cases. Furthermore, the people involved were illiterate labourers, who did not recall the dates. Every effort was made to get as much history as possible and the people in the villages were most co-operative.

They did not know that there was a hospital in Madras where smallpox patients could be isolated and treated. They stated that they were really scared when the outbreak was at its peak in the months of April and May. During our visit, they showed us all patients with fever, including cases of measles and even of dermatosis. In general, there was very good co-operation from all the people in the locality. If the Health Inspector of the block had visited the locality even once during these five months, he would have not only prevented further spread of infection, but also prevented some of the deaths which occurred during this outbreak. Unfortunately, this did not happen. The first information reaching the Health Directorate came from our unit.

Disposition of the villages and village characteristics

There is a group of hamlets and villages off Mangadu, which is a fairly big panchayat, 15 miles from Madras on Poonamalee Kunnathur Road. The villages and hamlets are about one mile from Mangadu on the same road. The first village on the west of the road is Chickkarapuram (Village 1). This is a fairly big village with many houses of masonry, construction and a few huts. There is only one main road, which is a motorable one. This road leads to a hillock on which there is a temporary colony (Salem extension) of hut dwellers. This temporary colony is about one-quarter mile from the main village. The main village population is comprised of permanent residents of all communities engaged in agriculture. The population of the Salem extension on the hillock consists of immigrant labourers belonging to the community of gounders who came from Salem for stone quarrying. These labourers live in temporary structures and, in general, reside there from January to August. As soon as the monsoon rains set in, they return to Salem. The main village consists of

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200-300 houses with a population of about 5000-6000. The Salem colony consists of about 60-70 huts with a population of 300, all engaged in stone cutting work.

Further along the road, another quarter of a mile, there is a village on the west side called Sivanthangal West (Village 2). The village consists of about 40-50 huts. There are very few masonry structures. It has a narrow cutcha road. The residents of this village are all permanent, belonging to the harijan community. Their occupation is in agriculture. A few of them own land, but the majority work under landlords.

Opposite this village, on the east side of the road, is a small hamlet which can be called Sivanthangal East (Village 3). This village consists of about 30-40 huts and one terraced masonry building. The terraced building belongs to a harijan who owns much land and employs many labourers on his lands. The huts are occupied by two communities. About half abutt the masonry building and are occupied by harijans who work on the agricultural land. The other half are occupied by the stone cutters of Salem - the gounders. There is no demarcation between the huts occupied by these two groups, but the people belong to different communities with different occupations.

As we proceed further along the road southwards, after a few yards, there is another village on the west of the road which can be called "Salem colony lower" (Village 4). This colony consists of temporary huts numbering about 40-50, all occupied by gounders, immigrants from Salem. This is situated almost on the side of the road at the bottom of the slope of another hillock.

As we proceed from Village 4 and climb the hillock, there is another colony on the top of the hillock which can be called "upper colony" (Village 5). This colony again consists of temporary huts numbering about 60-70, and the people occupying these huts are again all gounders, immigrants from Salem.

Coming back to the road and proceeding further south for a few yards, almost abutting the lower colony (Village 4) and separated from it by a narrow strip of land, is the harijan colony, Village 6. This colony is occupied by permanent residents of the locality and is predominantly harijan. A few Muslims also live there. The main occupation of the village is agriculture.

Thus, there are six individual hamlets or villages. The permanent residents are mostly harijan, who are agriculturists. The others who are immigrants from Salem, belong to the community of gounders and come every year in the months of December and January for quarrying and remain till July or August. They then go back to their home town in Salem district.

Detection of the outbreak

Kannan, Hindu harijan, male 45 years, was transferred from Government General Hospital to the Infectious Disease Hospital at about 10 a.m. on 19 June with a diagnosis of smallpox. He gave an address in the city of Bheopathy Nagar, Egmore. At that time, there were no cases of smallpox in the city. Enquiry revealed that he developed fever on 11 June and rash on 13 June at a village called Sivanthangal off Mangadu, near Poonamalee. He came to Egmore to his sister's house by bus that morning to seek her help to get himself admitted to a hospital. He did not stay at Egmore. His sister immediately took him to General Hospital in a rickshaw, and from the General Hospital Out-patient Department he was transferred to the Infectious Disease Hospital, Tondiarpet, in the Infectious Disease Hospital ambulance.

On questioning about contact with any smallpox case during the last three to four weeks, he said that his uncle's son, who was residing in the same village but in a different hut, had had smallpox and recovered. He had occasionally visited him while he was sick.

Source of infection for the first notified case - Kannan

Kannan lived in a small independent hut in Village 2, abutting the cutcha road. He was sick for nearly eight days at home before he was isolated at the Infectious Disease Hospital, Madras, but none of his contacts developed the disease and there was not a single case of smallpox in that village as a result of this case. As stated already, his uncle's son, who lived in Village 3, had smallpox a few days before, in the month of May. He is a harijan agriculturalist. He might have been the source of infection for Kannan or both might have contracted the infection from their master, the landlord who was living in the terraced house in Village 3. Both the master and his daughter recovered from smallpox in the month of May. These were the only four cases amongst the indigenous harijan population in the locality. One family out of nearly 40-50 in Village 2, and two families with three cases in the harijan population of Village 3 were affected.

Source of infection for smallpox cases in local harijan population and spread of the disease in the villages

On extensive investigation and interrogation, it was found that the first case occurred in Village 5 in the month of January.

Palani, gounder, and his family, permanent residents of Salem, went as usual to Guntur District, Andhra Pradesh State, to a village called Peruzilla for stone cutting. It appears that these gounders, in the months of December to January, migrate to Mysore State and Andhra Pradesh State as well as Madras State for stone cutting work. This is an annual feature, and they go back to Salem in the month of August with the onset of monsoon. The village of Peruzilla, six miles from Guntur, is reported to have been heavily infected with smallpox at that time. Chinnapayyan, Palani's son aged 20, and his daughter, Palaniamma, aged 12, developed smallpox in that village. Subsequently, his grandchild, Palanichami, one-and-a-half years old, developed the disease and died after ten days. Getting frightened, Palani (gounder) with his family, including the son and daughter who were still suffering from smallpox rashes, came to Madras by train and proceeded to Village 5 to join his relatives, who were already working in the quarry. This was about the third week of January 1968. By that time, Chinnapayyan had almost completely recovered but Palaniamma still had a rash. About eight days after their arrival there, another child of his, one year old, unvaccinated, developed the disease in the month of February and recovered.

The infection then spread in this village as well as to other villages among the Salem immigrants. In Village 5 alone, besides the Palani gounder's family, 10 more families were affected out of nearly 60 to 70 living in the upper colony. But in most of the affected families, almost all members suffered from the disease. The total number of cases in this village was 23, including the three imported cases. There were two cases in January (both imported) two cases in February (one imported), six cases (two families) in March, 11 cases (five families) in April, and two cases (two families) in May. Of the 23 cases in this village, four died.

The infection spread to Village 4 in the month of April. Out of 40-50 families there, only three were infected with a total of four cases with one death. All four were related to each other. There was one case in April, one in May and two in June. None of the other families were affected.

Though Village 6 (harijan colony) abutts on the lower colony Village 4, none of the residents of the former was affected.

In Village 3, which consists of two sections - harijans and Salem gounders - infection started in the Salem section in the month of March affecting only two families with a total of six cases. There was one case in March, one in April, two in May, and two in June. It was here that infection spread to the local indigenous harijan population, resulting in three cases, all in May. From here it spread to Village 2 in June, affecting Kannan, the first notified case. In Village 2, there was no further spread.

Infection spread to Village 1, Salem extension of Chickkarapalaya, in the month of May. Here again, out of nearly 70 families, only three families were affected with a total of 10 cases, five in one family, four in one family, and one in the third family. All except one occurred in May, the exception being in June.

Thus, two acute cases imported from Andra Pradesh State with rash, and another imported during the incubation period, were responsible for an outbreak of 44 cases, affecting 18 families amongst the migrants with 40 cases, and three families amongst the local indigenous population with four cases. The epidemic started during the last week of January and ended in the third week of June.

Twenty-four out of 47 cases were amongst persons over the age of 12, and 27 out of 47 cases were unvaccinated. All the deaths were amongst the unvaccinated. Two of the three imported cases were unvaccinated. All the four cases amongst the indigenous harijan population were in vaccinated adults. There was not much difference in the incidence with reference to sex, except in Village 1 where more women were affected.

Summary

A case of smallpox removed to the Infectious Disease Hospital from Egmore, Madras City, was responsible for unearthing an outbreak of smallpox that occurred in six hamlets off Mangadu, Chingleput District. After the first notified case came from the village for hospitalization, the epidemiological unit proceeded to that village to investigate the source of infection and found that cases have been occurring in these hamlets since January 1968 without the knowledge of Public Health Authorities.

There were altogether six villages on either side of the Poonamalee Kunnathur Road. Of these six, Village 1, Village 2, part of Village 3, and Village 6 are all permanent villages with a predominantly harijan population. A small number belong to other communities. Village 4 and 5 and part of Village 3 and Salem extension of Village 1 were comprised mostly of grounders, the immigrant labourers from Salem whose occupation is stone cutting in the quarry.

The first cases were imported from Peruzilla, a village six miles from Gunthur (Andra Pradesh State) into Village 3. Two children came with rash. The third case, an unvaccinated child in the same family, developed the disease within 8 days after arrival. These three cases were responsible for the spread of disease to all the villages except Village 6, which was not at all affected. The disease lurked for nearly five months, in all the villages and completely subsided by the end of June. There were altogether 47 cases, including the three imported cases. Of these 47, 43 were amongst the immigrants and four were amongst the indigenous harijans. Only 21 families were actually infected. Even amongst nearly 200 families of immigrant grounders, only 18 were infected. But amongst families infected, almost all members got the disease.

There were five deaths out of the 47 cases and all were among the unvaccinated immigrants. Nearly 50% of the cases were in vaccinated persons. All the four cases in the indigenous population were amongst vaccinated adults, and none died. Nearly 50% of the total cases were adults.

Altogether there were two cases in January, two in February, seven in March, 13 in April, 17 in May, and six in June. There were three deaths in April and two in May.

Observations

It is an annual event for these grounders from Salem to come for quarry work in the months of December and January to these villages. Hence, the Public Health Department should have taken note of this annual feature and protected all the population immediately.

Further, the fact that nearly half of these cases were unprotected shows that the vaccinal status amongst this migratory population in their parent village near Salem was very poor. The migratory labourers escaped vaccination both at their permanent residence as well as at their temporary residence. This experience is a very important eye-opener to the programme officers, showing that they will have to watch carefully the movements of migratory population and have special squads to deal with them, especially when it is known that the surrounding states are heavily infected and that these people move from state to state.

In spite of the fact that the migratory population put up their huts very near the indigenous population, the disease was largely confined to the immigrants. This may have been due to two factors. Firstly, the indigenous population and immigrants belong to two different communities, harijans and gounders, and secondly their occupations are completely different, agriculture and stone cutting. Hence, the community and their occupation separated them from free mingling with the result that the disease did not spread much to the local residents.

It is very much surprising that in spite of close association and free mingling within the population, only 18 out of 200 odd immigrant families were actually affected. But almost all members of the infected families got the disease. This again shows that smallpox is after all not a highly contagious disease. It is only close and continuous exposure that spreads the disease.

In spite of the fact that there were many unvaccinated persons in the population, the disease did not take an explosive course but spread very slowly, took nearly five months to die out, and died out by itself.

Half the total number of cases occurred in the village where the first importation occurred. In the other villages, the infection spread slowly and to a limited extent. Perhaps even this spread was by contact due to visits to the infected houses or at the work spot, which is almost a common meeting place for all the immigrants.

Conclusions

Migratory labour from other states is an important source of importation of infection and the health authorities should always be on the alert towards such migratory populations, which may start epidemics of smallpox in an otherwise smallpox-free locality. Migration of such populations cannot be checked. Consequently, the only thing that can be done is to see that the people are all protected as soon as they settle in any particular place.

Communal and occupational barriers seem to help to a very great extent in prevention of spread of the disease, especially in a rural setting. It seems to confine itself to a particular community because of restriction of free movements and of association between members of two different communities.

This outbreak has shown very clearly that smallpox is not a highly contagious disease. It spreads only on close contact and spreads slowly and not as an explosive epidemic.

It seems to die out by itself as soon as most of the unvaccinated population are exhausted.

If all the villages had been protected as soon as the first cases occurred, there is absolutely no doubt that the epidemic would have been terminated right at the beginning.