Available online at www.sciencedirect.com

Public Health

journal homepage: www.elsevier.com/puhe

Short Communication

Tackling mumps in a public health setting: loopholes in disease surveillance

K.G. Gopakumar

Primary Health Centre, Velur, India

ARTICLE INFO

Article history:
Received 4 January 2017
Received in revised form
8 May 2017
Accepted 23 July 2017
Available online 24 August 2017

Background

Disease surveillance is an important component of the public health programme of every country,[1] and each childhood immunisation programme is incomplete without a strict surveillance for vaccine-preventable diseases.[2] Kerala (Fig. 1), being one of the states in South India maintaining high health standards, has established the surveillance of diseases with public health importance using the model of 'district level disease surveillance' developed in the North Arcot district in the nearby state of Tamil Nadu.[2] The disease reports received in the office of the District Medical Officer (Health) on all working days are scrutinised and analysed. At present, the daily disease reporting is done in all of the 14 districts of Kerala through computer-assisted Integrated Disease surveillance Programme (IDSP).

Even though vaccination against the mumps virus is routinely administered as per the National childhood immunisation schedule, there are no efficient methods at present, to assess the burden of disease in the community. Vaccination of approximately 90% of the population is believed to provide herd immunity against the mumps virus.[3] Since mumps is usually a self-limiting illness and not associated with fatality, it is at present not notifiable under the IDSP system. Yet, the availability of a disease-reporting system is being used by a large number of doctors to report mumps in the space marked for 'any other disease' (Fig. 2). The experience of managing an epidemic of mumps and the importance of disease surveillance are represented in the study.

Tackling an epidemic

In the near past, there was an outbreak of mumps with a cumulative caseload of 36 cases in a single district in Kerala, merely in and around two primary health centres. The index case was traced out with much difficulty, to be a 5-year-old unvaccinated girl. The difficulty in containing the spread of the disease arose as the initial few cases went unreported. The situation was noticed later and became a public health concern when the outbreak happened in the nearby school, where most of the children (98%) in school were unvaccinated against the mumps virus. Even though many other viruses can cause parotitis, they do not produce parotitis on an epidemic scale.[4–6] The parotitis had spread here as an epidemic, and there was no hesitation in labelling the aetiological agent as mumps virus.

During the outbreak period (14th September to 29th November), 36 cases of mumps were recognised as per the WHO clinical case definition. The outbreak period extended from the symptom onset date of the source patient through two incubation periods after the symptom onset of the last laboratory-confirmed case. All the 36 cases were epidemiologically linked to the index case. Of the total cases, 13 (36%) were males and 23 (64%) were females. Apart from the 30 children affected (83%), 4 adolescents and 2 adults had also contracted the disease. Bilateral parotid involvement was seen in 32 cases (89%). Only four (11%) of them had received at

E-mail address: drkggopakumar@gmail.com.
http://dx.doi.org/10.1016/j.puhe.2017.07.022

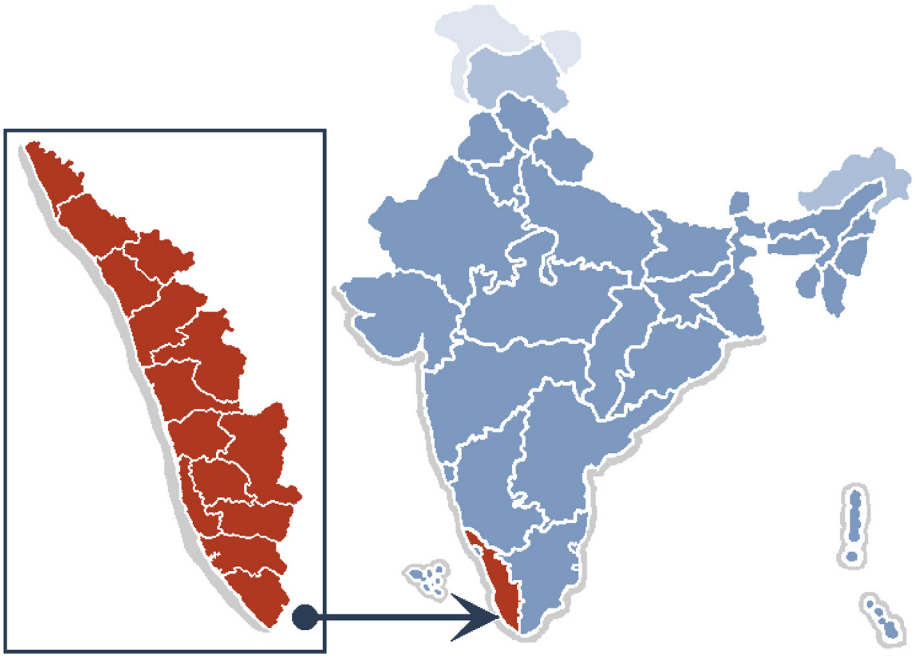

Fig. 1 – Map of India with the state of Kerala and its districts in the inset.

least one dose of measles, mumps and rubella (MMR) vaccine, and none had received the booster doses. No one experienced any complications like testicular pain, headache or pancreatitis (Table 1). One interesting observation was that even though many adults had exposure to the cases, only two of them contracted the disease. Both of them were diabetic on oral hypoglycemic agents for a long time and probably immunosuppressed.

Based on the standard recommendations,[7,8] contact tracing was done. The contacts of the case during the infectious period (3 days before until 5 days after onset of parotitis) were identified and hygienic practices advised. The exclusion of susceptible contacts from school was not practical, and hence, children with parotitis were exempted from school for at least 10 days after the onset of parotitis. Awareness classes were conducted for the teachers, students, and their parents in the school. Mass immunisation was conducted in the school and the surrounding five-kilometre area for all children below 5 years of age after consulting the District reproductive and child health officer. Due to the unforeseen situation, a shortage of vaccines was experienced and immunisation could not be given to the adolescent population immediately. There were at least two generations of transmission before the epidemic subsided.

Table 1 – Baseline characteristics of the reported cases (n = 36).

Characteristics	Number (percentage)
Age	
5 yrs	11 (30.7)
5–10 yrs	19 (52.7)
>10 yrs	6 (16.6)
Sex	
Males	13 (36)
Females	23 (64)
MMR vaccination status[a]	
Immunised	4 (11.1)
Not immunised	33 (88.9)
Complications	0 (0)

MMR = measles, mumps and rubella.
[a] Denotes children who has received at least one dose of MMR vaccine.

Discussion

In Kerala, the Universal Immunisation programme was launched in 1985, in the selected districts of Palakkad and Idukki, and by 1988, all of the 14 districts were covered. The measles booster at 18 months of age was introduced in the year 2010 and subsequently changed to the MMR booster in 2013. Rubella vaccination was introduced in February 2014 for adolescent girls, in the midst of controversies. In Kerala, more than 80% of children get vaccinated in Government hospitals, which strictly follow the National immunisation schedule rather than the schedule recommended by the Indian Academy of Paediatrics. This creates a situation, where children between 18 months and 5 years are getting immunised against measles, mumps and rubella, thus shifting the epidemiology curve towards the adolescent and adult population, who are non-immune and hence susceptible to mumps and rubella. This happens because the majority of the present adolescent population had received only the measles vaccine and not the MMR vaccine in their childhood. A similar pattern has already been reported earlier in developed countries.[9] Even though monovalent rubella vaccination was introduced recently in Government hospitals, it was not well accepted by the public. Only natural infection seems to confer lifelong immunity, with the waning of immunity after vaccination.[10,11]