RESEARCH LETTER

Varicella Outbreak in Children from Silvassa, Dadra and Nagar Haveli, India

Study describes epidemiological and laboratory findings of the fever with skin-rash cases (*n*=247) reported from Dadra and Nagar Haveli during 2018-19. For laboratory diagnosis, 33 sera and 5 blister swabs were obtained from 36 suspected cases. Varicella-zoster-virus DNA PCR and IgM EIA confirmed 33 cases and sequencing revealed circulation of clade-1 viruses.

Keywords: *Exanthematous illness, Field investigation, Laboratory diagnosis*.

Varicella infection is caused due to varicella zoster virus (VZV) that belongs to family *Herpesviridae* and genus *Varicellovirus*. Primary infection of VZV is referred to as 'chickenpox' and subsequent VZV reactivation as 'herpes zoster or shingles' [1]. Varicella outbreaks are frequently reported from various regions of India [2-9]. Varicella vaccine is not included in India's Universal Immunization Program (UIP) however; Indian Academy of Pediatrics recommends two doses of the vaccine (http://www.iapindia.org) at 15 months, 3-6 months apart.

Dadra and Nagar Haveli (DNH) consists of 70 different villages situated on the western coast of India. During 2018-19, in Silvassa block, cases of fever with skin rash were reported amongst 14 villages. A standard case definition was followed for suspected varicella [10], and the case details were recorded in a standard data sheet (i.e. patient details like age, gender, place, date of clinical onset, type of rashes etc.) Overall, 247 (male; female, 1.22:1) fever with skin rash cases (including one pregnant woman) were recorded from 14 villages, without any mortality.

Thirty three and 17 serum samples were collected from the skin-rash cases and their close contacts, respectively. Both the serum samples and blister swabs were available from two suspected cases, whereas only blister swabs were available from three suspected cases. All these sera were subjected to anti-VZV IgM and IgG antibody detection [10]. Four blister swabs and one blister swab, respectively collected from Velugam and Surangi villages were processed and subjected to VZV DNA PCR [10]. PCR positive blister swabs were used for virus isolation in Vero cells. PCR amplicons were sequenced using forward and reverse primers, and the consensus sequence was submitted to GenBank (MK959623 to MK959627). All data were analyzed using Epi Info software version 7.2. Descriptive statistics were reported as mean and standard deviation (SD).

Between November, 2018 and April, 2019, 247 cases of fever with skin-rash were reported from 14 villages of Silvassa block of DNH with male-female ratio of 1.22:1. The mean (SD) age was 8.65 (6.48) year with 92% (228) patients younger than 18 years. The distribution of fever with skin-rash cases is presented in **Fig. 1**. Case follow-up was done up to 25 weeks and none of the cases required hospitalization. The initial symptoms of vomiting (*n*=31), appetite loss (*n*=203), muscle pain (*n*=41) and headache (*n*=179) was followed by fever and skin rashes (247). None of the cases reported pneumonia or other complications and all the cases recovered without any further clinical co-morbidities. Interestingly, clinical symptoms were not reported in any of their close contacts (i.e. 12 children and 5 adults).

Thirty three skin rash cases were confirmed by anti-VZV IgM EIA and VZV DNA PCR and in 3 cases anti-VZV IgG EIA was positive. Serological and molecular analysis confirmed varicella in 92% of them. Twenty eight laboratory confirmed varicella cases (VZV IgM) had median (IQR) onset of 10 days (8-12) (33 out of 36). Thirty six suspected varicella cases included 35 children (and 1, 24 yrs adult) of which 90% were (9 out of 10) females and 92.3% (24 out of 26) were males. Of the 17 contacts, none showed laboratory confirmed varicella but 15 contacts showed anti-VZV IgG antibodies, indicating past exposure. The PCR amplicons (*n*=5) were sequenced and a consensus gene fragment was used for sequence similarity search using BLAST (*https://blast.ncbi.nlm.nih.gov/Blast.cgi*), which indicated the presence of VZV clade-1. Passaging of blister swabs in vero cells failed to show cell cytopathic effect.

Previously, we reported varicella outbreaks in two villages from other part of Dadar and Nagar Haveli, where a circulation of clade-1 VZV was documented [10]. Present report confirms circulation of a similar VZV clade.

Absence of health awareness and delayed isolation of cases at home may have resulted in clusters at both villages. Interestingly, majority of cases had travel history to nearby villages and may be additional source of transmission; however, this could not be investigated. In addition, not all cases were referred for laboratory investigations.

Varicella is vaccine preventable disease but yet to garner attention in India. Study emphasizes the need for more

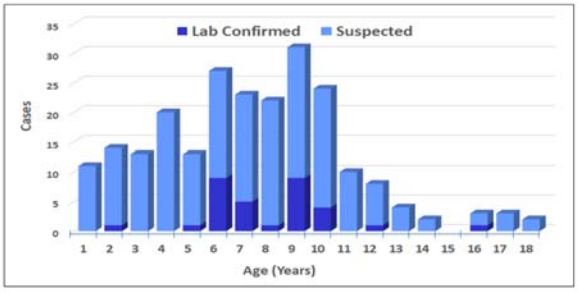

Fig. 1 Age-wise distribution of suspected and laboratory confirmed varicella infection in children below 18 years (*n*=230).

investigations on skin rash cases to detect etiology, so as to have better epidemiological picture of varicella in the country.

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