

A Varicella Outbreak in a Highly Vaccinated School Population in Voluntary 2-Dose Era in Beijing, China

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Abstract : Background: Two-dose varicella vaccination has been recommended in Beijing since November 2012. We investigated a varicella outbreak in a highly vaccinated elementary school population to examine transmission patterns and risk factors for vaccine failure. Methods: A varicella case was defined as an acute generalized maculopapulovesicular rash without other apparent cause in a student attending the school from March 28 to May 17, 2015. Breakthrough varicella was defined as varicella >42 days after last vaccine dose. Vaccination information was collected from immunization records. Information on prior disease and clinical presentation was collected via survey of students' parents. Results: Of the 1056 school students, 1028 (97.3%) reported no varicella history, of whom 364 (35.4%) had received 1-dose and 650 (63.2%) had received 2-dose varicella vaccine, for 98.6% school-wide vaccination coverage with ≥ 1 dose before the outbreak. A total of 20 cases were identified for an overall attack rate of 1.9%. The index case was in a 2-dose vaccinated student who was not isolated. The majority of cases were breakthrough (19/20, 95%) with attack rates of 7.1% (1/14), 1.6% (6/364) and 2.0% (13/650) among unvaccinated, 1-dose, and 2-dose students, respectively. Most cases had < 50 lesions (18/20, 90%). No difference was found between 1-dose and 2-dose breakthrough cases in disease severity or sociodemographic factors. Conclusion: Moderate 2-dose varicella vaccine coverage was insufficient to prevent a varicella outbreak. Two-dose breakthrough varicella is still contagious. High 2-dose varicella vaccine coverage and timely isolation of ill persons might be needed for varicella outbreak control in the 2-dose era.

Keywords : varicella, outbreak, breakthrough varicella, vaccination

Conference Title : ICEID 2017 : International Conference on Epidemiology and Infectious Diseases

Conference Location : Boston, USA

Conference Dates : April 24-25, 2017