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Case Report

Reinfection of Varicella zoster in a vaccinated adult

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on epidemiologic features, such as contact with other Varicella cases.² Laboratory tests are available to confirm diagnosis of Varicella, assess immune status, and genotype of VZV strains. Varicella vaccine (OKA strain) is available in India.

However, reports of Varicella outbreaks in highly immunized groups in Japan and USA have made effectiveness of Varicella vaccine questionable. We present a case of Varicella in a young adult patient who gave history of chickenpox in childhood and was previously immunized with Varicella vaccine, yet manifested a full blown disease.

Case report

A 19-year-old male patient, presented with skin rash of two days duration. He gave history of having fever on day one of appearance of skin rash. He denied history of any drug intake, respiratory or gastrointestinal symptoms prior to the onset of skin rash. He gave history of contact with a known case of chickenpox during his leave, 17 days before the onset of present symptoms. He gave history that he had chickenpox at 5 years of age and also that he was vaccinated with 2 doses of Varicella vaccine at the age of 15 years. Same was further confirmed by his mother who is health care personnel by profession. On general physical examination on the day of presentation he had mild fever. Dermatological examination showed numerous symmetrical pleomorphic skin lesions in various stages of development like macules, papules, vesicles,

Introduction

Chickenpox is an acute, highly infectious disease caused by Varicella-zoster virus. Approximately 90% of cases occur in children and lesser in adults. As per literature 55 percent of Varicella-associated deaths occur among adults.¹ One attack gives durable immunity and second attacks are rare.¹ People who already had chickenpox and get it again – is known as “reinfection”.² If this happens, a milder form of the illness usually occurs, with fewer symptoms. Diagnosis is usually made on clinical grounds, based on rash characteristics and

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Fig. 1 – Close view of characteristic lesions.

pustules (Fig. 1) distributed over the scalp face, neck, chest and abdomen (Fig. 2). Systemic examination did not reveal any abnormality. He was diagnosed clinically as a case of Varicella and managed with calamine lotion, antipyretics & antiviral (Tab acyclovir). He recovered in 7 days without any complication. Polymerase chain reaction amplification and subsequent DNA sequencing of the sample from the fresh fluid filled lesions confirmed the virus genome to be VZV of wild type.

Discussion

This was a clinically and laboratory confirmed case of Varicella in a patient with prior history of similar episode and vaccination. Fever and rash appearing on the same day is characteristic feature of Varicella infection. It is well known that natural immunity following chickenpox is largely protective against reinfection. Severe symptoms were possibly prevented in this case because of residual antibodies due to prior infection.² Unfortunately, it was not possible to check his VZV antibody titers in this case. Although reinfection of chickenpox is difficult to prove, a study from Japan in the year

2002 reported that 13% of children presenting with chickenpox had experienced a well-documented previous episode, thus suggesting that clinical recurrence may be more common than previously thought.³ However, there are no population-based data on the frequency of reported second infections with Varicella in Indian population.

Breakthrough Varicella is an infection with wild-type VZV occurring in individuals after 42 days of Varicella vaccination characterized by shorter illness and fewer than 50 skin lesions which are predominantly maculopapular rather than vesicular. However, 25%–30% of persons vaccinated with 1 dose with breakthrough Varicella have clinical features typical of Varicella in unvaccinated people.² Since the clinical features of breakthrough Varicella are often mild, it can be difficult to make a diagnosis on clinical presentation alone. There is limited information about breakthrough Varicella in persons who have received two doses of vaccine compared to persons who have received a single dose of Varicella vaccine.⁴ This case presented with a full blown clinical picture despite previous vaccination. Studies have demonstrated vaccine effectiveness in the range of 85%–90% for prevention of clinical disease and 100% for severe disease.⁴ A chickenpox outbreak was reported from a school at Oregon, USA in 2000 in which 97% of students without a prior history of chickenpox were vaccinated. Students vaccinated more than five years before the outbreak were at risk for breakthrough disease. Vaccine effectiveness was found to be 72% (95% confidence interval: 3%–87%).³

New variants of VZV have also been reported recently, including VZV-MSP, isolated in St. Paul–Minneapolis, MN, and VZV-BC, isolated in British Columbia.^{5,6} We do not know whether there is a mutant strain of VZV in India; thus this case could further help us to study epidemiological transition of VZV infection. There are no reported cases of reinfection in India along with breakthrough Varicella in to the best of our knowledge. Widespread use of vaccine is likely to change the epidemiological pattern of this disease, shifting it from early childhood to adolescents or young adults.¹

Fig. 2 – Distribution of rash on trunk.

There is a need to carry out studies to establish the effect of Varicella vaccination and reinfection on the disease pattern in Indian population.

Conflicts of interest

All authors have none to declare.

REFERENCES

1. Park K. Epidemiology of communicable diseases. In: Park K, ed. *Parks Textbook of Preventive and Social Medicine*. 21th ed. Bhanot; 2007:124–125.
2. Dalya G, Mona M, Seward Jane F. Varicella and herpes zoster. In: Wallace Robert B, ed. *Maxcy Rosenau Last, Public Health and Preventive Medicine*. 15th ed. The McGraw-Hill Companies; 2008:127–132.
3. Hall S, Maupin T, Seward J, et al. Second varicella infections: are they more common than previously thought? *Pediatrics*. 2002;109:1068–1073.
4. Tugwell BD, Lee LE, Hilary Gillette RN, Lorber EM, Hedberg K, Gieslak PR. Chickenpox outbreak in a highly vaccinated school population. *Pediatrics*. 2004;113:455–459.
5. Santos RA, Hatfield CC, Cole NL, et al. Varicella-zoster virus gE escape mutant VZV-MSP exhibits an accelerated cell-to-cell spread phenotype in both infected cell cultures and SCID mice. *Virology*. 2000;275(2):306–317.
6. Tipples GA, Stephens GM, Sherlock C, et al. New variant of varicella-zoster virus. *Emerg Infect Dis*. 2002;8(12):1504–1505.