# Case Report

# Acne-like Presentation of Recurrent Varicella Infection in a Child with Nephrotic Syndrome

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*Primary infection with varicella zoster virus was assumed to confer lifelong immunity. Nevertheless, cases of varicella reinfection had been reported regardless of immune status. Here the authors described a case of 11-year old girl with nephrotic syndrome, currently on 80 milligrams of prednisolone for one month. She presented with one day of fever, diarrhea and acne-like rash at her forehead, nose and few on the neck. She had a past history of chickenpox. Her vesicles were examined by pediatric dermatologist and Tzanck smear was performed. Multinucleated giant cells were detected and diagnosis of varicella was made. This report infers that positive varicella history alone might not be sufficient to confer immunity, especially in immunocompromised host. Atypical presentation of recurrent varicella in immunocompromised host can be presented.*

***Keywords:*** *Recurrent varicella, Immunocompromised, Nephrotic syndrome, Acne-like, Child*

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Primary varicella zoster virus (VZV) infection would results in clinical manifestations of varicella (chickenpox). It was previously believed that this primary infection confers lifelong immunity against the disease[1]. This assumption played a key role in current vaccination policy. Patients with previous history of varicella both by parental or self-recall were considered immune and exempted from vaccination[2,3]. A large cross-sectional study demonstrated 90-99% of positive predictive value of reported varicella history in relation to VZV immunity in children older than ten years old[4]. Recurrent varicella infection can occurred as latent reactivation of endogenous virus or reinfection with a distinct genotypes[5-7]. Nevertheless, latent reactivation of endogenous virus following primary infection manifested as dermatomal distribution of herpes zoster. Case of varicella reinfection had been reported in both immunocompetent, although rare and immunocompromised host despite positive varicella history[8-12]. Epidemiological studies showed that patients with varicella reinfection manifest typical varicella rash described as generalized pruritic, vesicular rash with crusts, existing in crops concentrating on face, trunk and extremities. Only few cases reported localized rash[8,11,12]. In immunocompromised hosts, patients tended to experience more severe and complicated clinical course[12-14]. Here the authors reported a child with nephrotic syndrome with recurrent varicella, presenting with localized acne-like rash.

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## Case Report

A previously healthy eleven-year old girl presented with generalized edema, proteinuria and hypoalbuminemia a month prior to the incident. She was diagnosed with nephrotic syndrome and currently on 80 milligrams of prednisolone (60 mg/m$^2$/day) as her treatment regimen for one month. She had a past medical history of varicella when she was four years old. The episode was described as generalized vesicular rash throughout the body with fever. It was instantly recalled by the patient and family members because all the family members experienced the symptoms during the same period of time.

She presented to the authors hospital with one day of low grade fever with diarrhea as well as newly developed rash on her face, nose and neck. On admission, the patient was alert but appeared toxic. Her initial vital signs showed body temperature of 38.1°C, heart rate of 160 beats per minute, respiratory rate of 22/minute and blood pressure of 70/40 mmHg. Cutaneous finding were shown whiteheads comedone-like, erythematous papules and vesiculopustules on

her face, nose and few on the neck (Fig. 1). No rash was detected on the trunk and extremities. No dermatomal pattern was detected. Aside from weak pulse and cold, clammy extremities, other examinations appeared unremarkable. Initial diagnosis of acute gastroenteritis with hypovolemic shock was made. With high dose of corticosteroids use, septic shock and adrenal shock could not be excluded. Thus, cortisol level and hemoculture were obtained along with complete blood count and blood chemistry. Her initial complete blood count showed hematocrit of 41%, white blood count of 19,670/$mm^3$ with 83% of polymorphonuclear cells and 7% of lymphocytes and platelet count of 447,000/$mm^3$. Intravenous ceftriaxone (50 mg/kg/day) was empirically initiated and fluid resuscitation was performed until vital signs stabilized. Intravenous hydrocortisone was also given to cover possible adrenal insufficiency. Upon history taking, she reported contact with varicella patient approximately three weeks before her development of symptoms, making a differential of varicella infection also feasible. Due to acne-like presentation of a rash which resembled steroid induced acne, pediatric dermatologist consultation was made and the base of the vesiculopapular was stained with Tzanck smear. The stain showed multinucleated giant cells and clinical diagnosis of varicella was made. Intravenous acyclovir (1,500 mg/$m^2$/day) was immediately initiated and continued for 5 days. The fever subsided and all lesions crusted without any development of generalized vesicular rash. Her admission cortisol level was 10.01 micrograms/deciliter, confirming the diagnosis of adrenal insufficiency. Intravenous hydrocortisone was switched to oral prednisolone on the third day of her admission. She was discharged, without any complication, with oral acyclovir and oral prednisolone on day 7 of her admission.

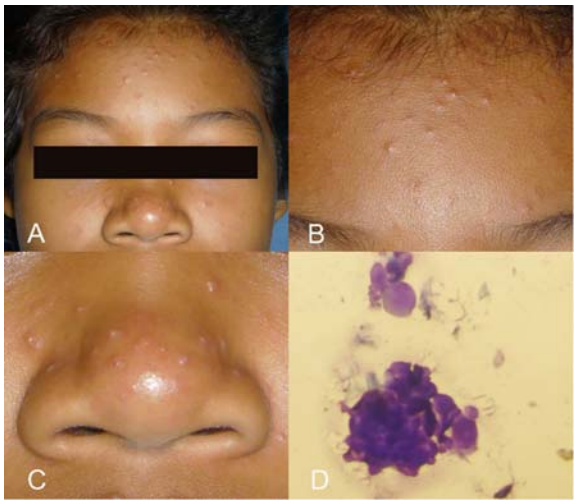


**Fig. 1** (A-C) Acne-like rash; whiteheads comedone, papules and vesicopustules at forehead and nose. D; multinucleated giant cell obtained from the patient's skin lesions

**Discussion**

Varicella infection, chickenpox, was an extremely common communicable disease. Primary varicella infection confers natural immunity and generally protects against reinfection. However, a case of clinical reinfection with varicella virus had been reported[10]. Clinical manifestations of varicella reinfection in immunocompromised patients reported in literature consist of diffuse pruritic, vesicular rash typical of primary varicella infection and rarely localized rash[8,11,12]. Herein, the authors reported a case with localized acne-like presentation of varicella reinfection. No previous literature reported varicella reinfection with localized rash. A localized rash most occurred in dermatomal distribution as of latent viral reactivation. As previously stated that localized rash is a rare manifestation, this patient only developed lesions on her face, nose and neck without dermatomal distribution. Thus, other differential diagnoses had to be considered. Due to history of high dose of corticosteroid usage and acne-like presentation, steroid-induced acne must be included into the differential. Nevertheless, steroid-induced acne tended to manifest predominantly on face, chest and upper back as monomorphous papulopustular rash[15,16]. Hence, the diagnosis of steroid-induced acne was less likely. Furthermore, with history of varicella contacted within the incubation period and presence of multinucleated giant cells, the lesion was highly suggestive of varicella[1]. Reinfection was feasible in this patient because of possible immunosuppressive effect from high dose of corticosteroid usage[17]. The drawback of this report was that reinfection was only confirmed clinically by pediatric dermatologist and presence of multinucleated giant cells without VZV culture and serological testing due to laboratory unavailability.

Although self-limited in immunocompetent individuals, clinical course in immunocompromised tends to be more detrimental[12-14]. A large retrospective study in children with acute lymphoblastic leukemia showed that recent steroid therapy was associated with more severe clinical course of varicella infection[13]. Most common complications described in literature included necrotizing pneumonia, bacterial super-

infection, acute hepatitis, liver failure as well as coagulopathy, unstable vital signs or death[18,19]. Other rare manifestations included abdominal pain, vomiting, diarrhea and hyponatremia[20]. Thus, in immunocompromised individiuals, any skin rash should be prudently diagnosed to avoid possible serious complications.

Unlike other case reports of immunocompromised patients with varicella[12-14], corticosteroid was continued in this patient. With high dose of corticosteroids usage, her initial hypotension and history of diarrhea might also be a symptom of adrenal insufficiency[21]. Blood cortisol level was obtained at the time of hypotension. Her cortisol level was 10.01 micrograms/deciliter. According to the clinical practice parameter of American college of critical care medicine 2007, patients with cortisol level at time of stress (hypotension, septic shock) lesser than 18 micrograms/deciliter were considered to have adrenal insufficiency[21]. Thus, corticosteroid was continued to treat symptomatic adrenal insufficiency.

**Conclusion**

The authors describe another possible clinical manifestation of varicella reinfection in immunocompromised patients. The finding infers that positive history of varicella alone is not sufficient to confer immunity. Thus, avoidance of contact with varicella cases is highly recommended in such patients. Furthermore, varicella zoster immunoglobulin and vaccine might be considered in immunocompromised individuals once contact with varicella case, regardless of previous history, to prevent possible complications of varicella infection.

**Potential conflicts of interest**

None.

**References**


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## *โรคอีสุกอีใสเป็นซ้ำที่มีผื่นคล้ายสิวในผู้ป่วยเด็กโรค nephrotic syndrome*

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*โรคอีสุกอีใสเมื่อเกิดการติดเชื้อแล้วมักจะมีภูมิคุ้มกันเกิดขึ้นตลอดชีวิต อย่างไรก็ตามมีรายงานผู้ป่วยที่เป็นโรคอีสุกอีใสเป็นซ้ำ ในรายงานฉบับนี้ได้รายงานผู้ป่วยที่เคยป่วยเป็นโรคอีสุกอีใสในอดีต ซึ่งกำลังรักษาโรค nephrotic syndrome ด้วยยา prednisolone ขนาด 80 มก./วัน เป็นเวลานาน 1 เดือน และมีการป่วยเป็นโรคอีสุกอีใสซ้ำ โดยมีผื่นเฉพาะที่ใบหน้าและลำคอลักษณะคล้ายสิว วินิจฉัยด้วยการตรวจย้อม Tzanck smear จากตุ่มน้ำที่บริเวณใบหน้าซึ่งพบ multinucleated giant cells ดังนั้นในผู้ป่วยที่มีภาวะภูมิคุ้มกันบกพร่อง แม้จะมีประวัติการเป็นโรคอีสุกอีใสแล้วก็ยังมีโอกาสเป็นซ้ำได้และอาจพบลักษณะผื่นที่ผิดไปจากปกติได้*