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CASE REPORT

A Case of Generalised Varicella in an Adult

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Abstract: Severe varicella is relatively rare in adults and may lead to death. Our case report describes a 36-year-old man with generalized papules and vesicles. The diagnosis was severe varicella, tinea cruris and type 2 diabetes. Generalized rash of severe varicella is very rare in clinically. In this patient, three days after the appearance of the rash, the CD4+T/CD8+T ratio increased, as did the serum levels of IFN-γ, TNF-α, and IL-17A, suggesting that the balance of the immune system was disturbed and there was an increased likelihood of viral infection, which may be related to the generalized spread of the lesions. The patient was discharged from the hospital after 2 weeks of antiviral treatment along with hepatoprotective, hypoglycemic and antifungal treatment of the buttocks with the lesions significantly reduced.

Keywords: generalized, varicella, diabetes

Introduction

Varicella is a disease caused by the varicella-zoster virus (VZV), which is primarily transmitted through the respiratory tract.[1] It is common in children and is a self-limited disease. Approximately 3% of patients may develop severe varicella, which can lead to abnormal liver function, pneumonia, encephalitis and other symptoms that can be clinically life-threatening.[2] Severe varicella is relatively rare uncommon in adults and rarely causing widespread rashes all over the body. In this paper, we report a case of a patient with type 2 diabetes mellitus and tinea cruris who presented with generalized erythema, papules, vesicles and pustules all over the entire body, including the palms and soles. The patient presented with high fever, chest tightness and liver damage and was admitted to the hospital with antiviral, anti-infective and supportive symptomatic treatment with satisfactory results.

Clinical Data

A 36-year-old man with papules, papules, vesicles and pustules all over his body for 2 days, accompanied by fever, without local itching, pain or other discomfort. Without treatment, the rash gradually increased and spread to the whole body, and the body temperature reached 39.0°C, accompanied by chest tightness and sore throat. The patient was in good health and denied having any history of chronic diseases such as hypertension, coronary artery disease, hepatitis, and tuberculosis. Physical examination revealed that the patient had a high fever and rapid heart rate, and was generally in poor condition.

Dermatological Examination

Dermatologic examination revealed densely distributed erythematous macules, papules, vesicles and pustules on the head, face, trunk, extremities, palms, soles and external genitalia (Figure 1A–G). Lesions were isolated, ranging in size from rice to soybean, nonfused, and without vesiculation or exudation. A well-demarcated erythema with dense pustules, grayish-white scale and dark red eschar was seen on the buttocks (Figure 1H).

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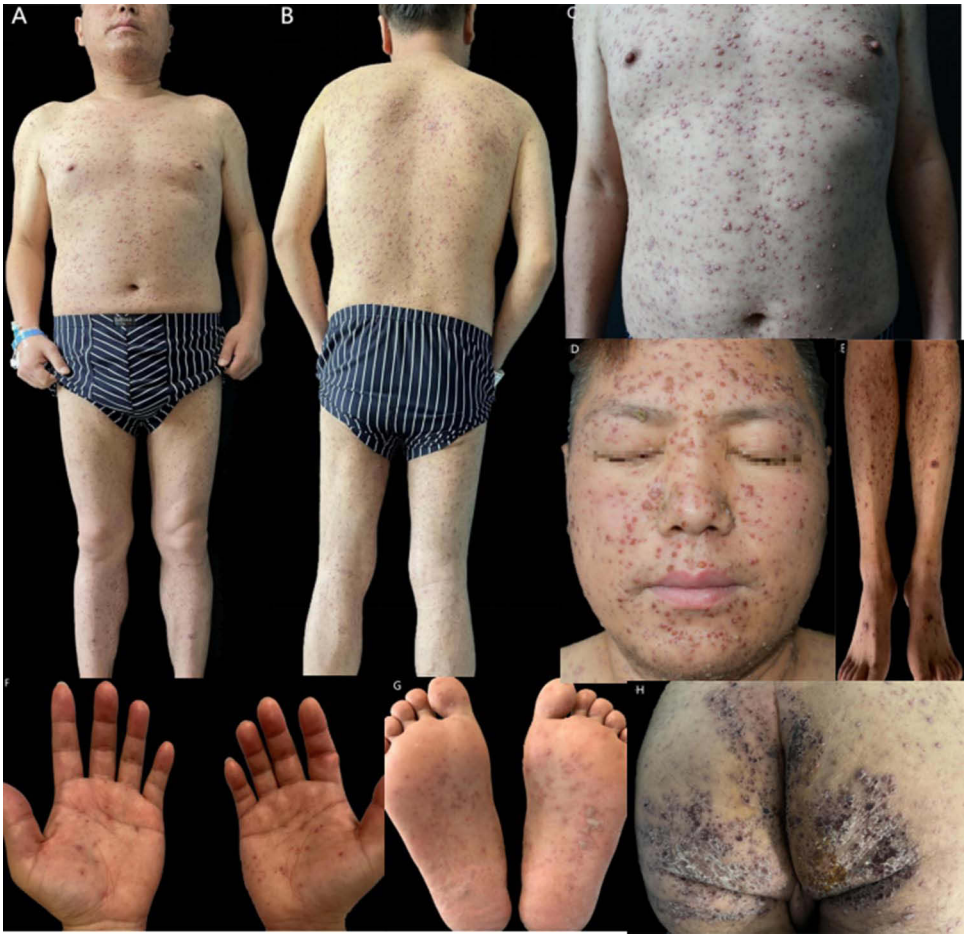

Figure 1 Lesions on admission of the patient with severe varicella. Densely distributed erythematous macules, papules, vesicles and pustules were isolated on the trunk, extremities, external genitalia, head (**A-C** and **E**), face (**D**), palms (**F**) and soles (**G**) ranging in size from rice to soybean, nonfused and without vesiculation or exudation. A well-demarcated erythema with dense pustules, grayish-white scale and dark red eschar was seen on the buttocks (**H**).

Laboratory Tests

Laboratory tests showed no significant abnormalities in renal function, electrolytes, routine urinalysis, complete blood count, respiratory viral testing, bacterial culture, secretion identification, serum Epstein-Barr virus, and vesicular fluid HSV-I and HSV-II. The patient's abnormal laboratory data are shown in Table 1.

Table 1 Patient's Abnormal Laboratory Results

	Value w/units	**Normal range**
Serum neutrophils	37.9%	40–75%
Lymphocytes	52.3%	20–50%
C-reactive protein(CRP)	22.44 mg/L	0–10 mg/L
Triglycerides	2.60 mmol/L	0.4–1.88 mmol/L
Alanine aminotransferase(ALT)	98 U/L	5–50 U/L
Aspartate aminotransferase(AST)	53 U/L	0–40 U/L
Uric acid	498.0 μmol/L	208–428 μmol/L
Glucose	15.08 mmol/L	3.89–6.11 mmol/L
CD4+/CD8+ ratio	2.3	1.4–2.0
IFN-γ	56.94 pg/mL	0–7.38 pg/mL

(*Continued*)

Table 1 (Continued).

	Value w/units	Normal range
Interleukin-17A (IL-17A)	2.83 pg/mL	0–2.44 pg/mL
TNF-α	18.83 pg/mL	0–5.15 pg/mL
Vesicular fluid VZV detection	Positive	Negative
Gluteal scales	A large number of mycelia	Negative

Pathological Examination

Pathologic examination of the skin of the left foot revealed intracellular oedema, eosinophilic inclusion bodies, subepidermal blistering, superficial dermal vascular degeneration and necrosis, and lymphocytic and neutrophilic infiltration (Figure 2).

Clinical Diagnosis

Based on the clinical presentation and relevant laboratory findings, rule out diseases such as Kaposi's varicelliform eruption, herpes simplex and hand-foot-mouth disease, the patient was diagnosed with generalized varicella, tinea cruris, type 2 diabetes mellitus and liver injury.

Treatment

The patient was treated with the intravenous drip adenosine monophosphate 0.4g/d, valaciclovir hydrochloride tablet 0.6g/d oral and apply acyclovir cream externally to antiviral and apply topical naphthotifen hydrochloride cream on buttocks to antifungal. Supportive care was also given, including glycyrrhizinate diamine capsules 300mg/d oral to liver protection, metformin sustained-release tablets 1g/d Oral to glycaemic management, apply mupirocin ointment externally to infection prevention and increased fluid intake. After 2 weeks of treatment, the rash has essentially resolved over the entire body, with some scaling on the soles and palms, dark erythema and some desquamation on the buttocks (Figure 3).

Discussion

In China, more than 80% of varicella patients are children under 15 years of age, with the most common age 5 to 6 years old, which may be related to the vaccines lowering their antibody level, extending the time of vaccination, and increasing aggregation when they enter kindergarten.[3] Severe varicella is more common in infants under 1 year of age, pregnant

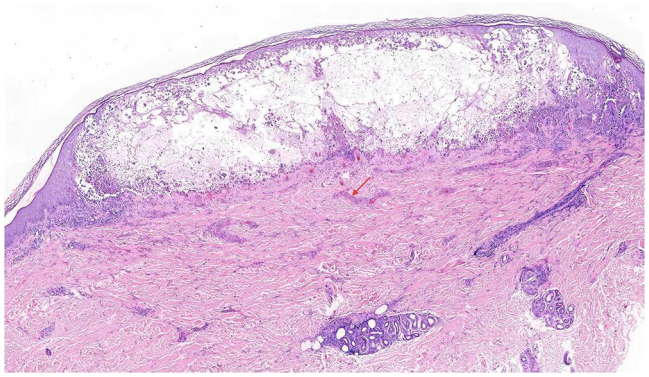

Figure 2 Histopathology on admission of the patient with severe varicella. Histopathologic examination of the skin of the left foot revealed intracellular edema, eosinophilic inclusion bodies, subepidermal bullae formation, vascular degeneration and necrosis in the superficial dermis, and inflammatory cell infiltration mainly composed of lymphocytes and neutrophils around blood vessels and in vesicles (HE × 40).

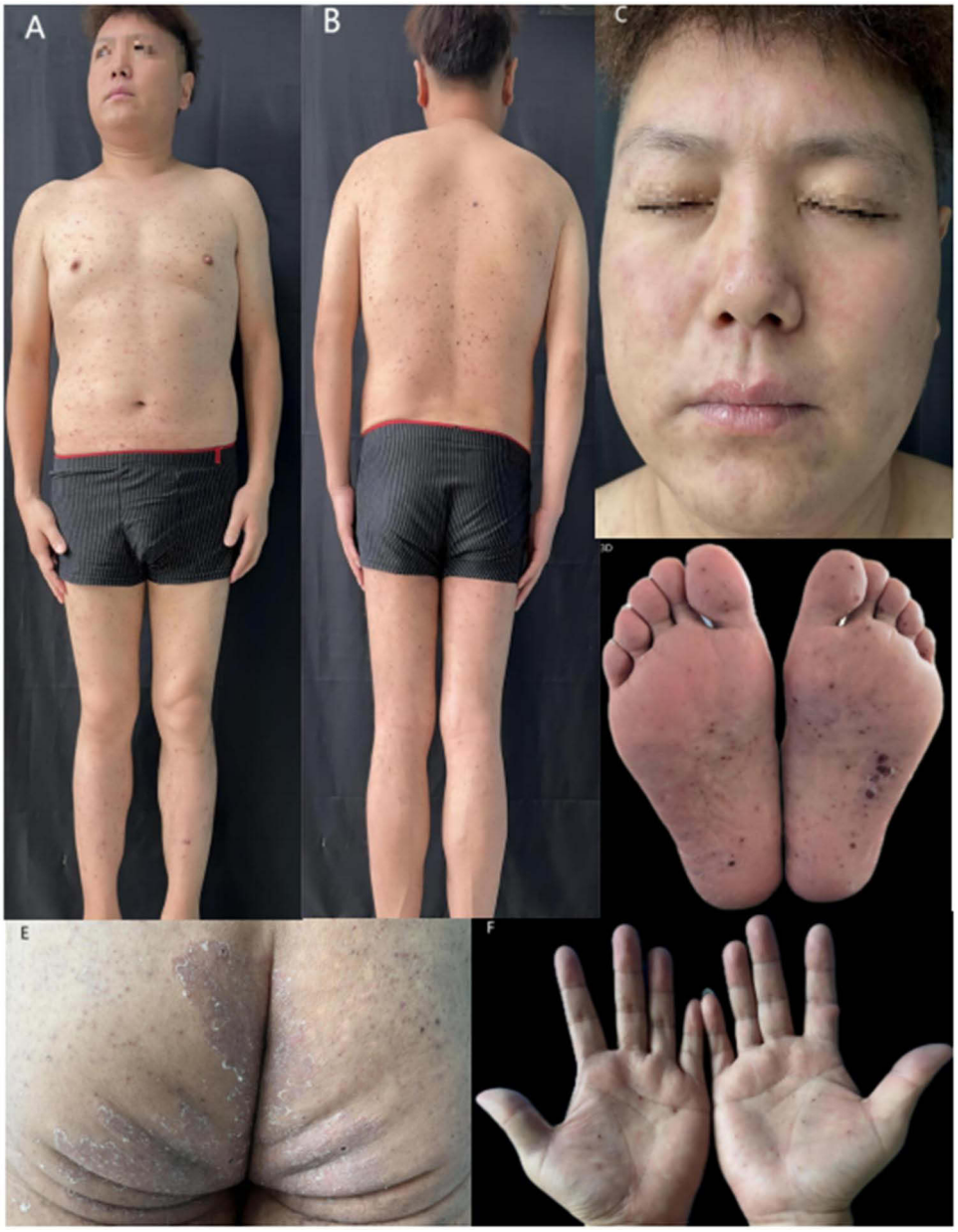

Figure 3 The patient's lesions two weeks later. The rash has essentially resolved over the entire body (**A–C**), with some scaling on the soles and palms (**D–F**), dark erythema and some desquamation on the buttocks (**E**).

women and long-term recipients of immunosuppressive drugs, organ transplant recipients, HIV-infected individuals and others with weakened immune function.[4] The rash is often generalized over the whole body and complicated by severe symptoms of infection and intoxication, the body temperature can reach 40°C or more, some have even died due to severe complications.[5]

Our patient was a middle-aged man with a poorly documented vaccination history and a two-year history of type 2 diabetes mellitus. Erythema, papules, vesicles and pustules were present over the entire body (including palms, soles, mouth and external genitalia) and covered more than 100% of the body surface. The chickenpox lesions in the area of the tinea cruris presented as pustules, presumably a fungal infection aggravating the symptoms of a viral infection. The patient presented with high fever, chest tightness, liver damage and abnormally elevated blood glucose. It is suggested that longstanding diabetes mellitus led to immunocompromise and the development of severe varicella (confirmed by PCR for VZV positive in vesicular fluid) and fungal infection of the buttocks (confirmed by antifungal fluorescent

staining). The lesions gradually resolved and the patient recovered well after symptomatic treatment with antivirals, hypoglycemic agents, liver protection and intensive skin care.

A review of the literature shows that patients with generalized varicella (only a few cases have been reported) often have severe underlying diseases (eg, angina pectoris, nephrotic syndrome, systemic lupus erythematosus, etc)., have not been vaccinated against varicella zoster virus, and have been taking oral glucocorticoids for a long time.[6–8] Adishvili et al successfully cured an adult patient with severe varicella complicated with deep Venous thrombosis and pulmonary embolism.[6] The hemorrhagic varicella in adults is rare, but has an extremely high mortality rate.[7,8] Our patient, on the other hand, had none of these factors that promote viral activation and spread. The patient appeared strong and had no significant abnormalities except for diabetes mellitus and tinea cruris. However, the number of lesions and the area involved on his body exceeded all previous reports. Therefore, we hypothesized that an unidentified etiologic factor contributed to the severity and generalization of the lesions.

When a person is first infected with VZV, the virus replicates locally in the upper respiratory tract and epithelial cells, then translocates to T lymphocytes in the amygdala, and further replicates in organs of the reticuloendothelial system such as the liver and spleen.[9,10] VZV activation affects the CD4+T/CD8+T ratio, the secretion of IFN-γ and TNF-α by Th1 cells, and the secretion of IL-17A by Th17 cells. In this patient, three days after the appearance of the rash, the CD4 +T/CD8+T ratio increased, as did the serum levels of IFN-γ, TNF-α, and IL-17A, suggesting that the balance of the immune system was disturbed and there was an increased likelihood of viral infection, which may be related to the generalized spread of the lesions.

Institutional Approval

The Ethics Committee of the Second Afiliated Hospital of Wannan Medical College granted permission to report this case.

Consent to Participate

Written consent was obtained from the patient for publication of case details along with imaging.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests for this work.

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