

# Journal of Family Medicine Forecast

## When Common is Unusual

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### Abstract

Only a small percentage of patients with chicken pox experience complications. Secondary bacterial infections, the commonest complications, infected mainly by either *Staphylococcus* or *Streptococcus* bacteria are well documented in the literature. People who are immunocompromised are more likely to develop a serious case of this illness. Those who are previously healthy are usually infected with mild complications. Herein we present a healthy paediatric case, infected with *Varicella zoster* virus infection and complicated severely by bacterial soft tissue infection at early phase of the illness. Several factors were suspected as the cause. Early detection and referral, as well as focused treatment at primary care level are crucial.

**Keywords:** Chickenpox; Skin disease; Staphylococcal skin infection; *Varicella zoster*

### Introduction

Chicken pox is caused by the *Varicella zoster* virus, which is a member of the herpes virus family [1]. *Varicella* infection occurs in almost all people at some point in their life, and children younger than 10 years old are commonly affected [2]. The infection starts with some prodromal signs and is followed by skin rash mainly on the trunk and head. The rashes start with macules that rapidly become papules, vesicles, pustules, and scabs [3]. The infection is normally benign, and children generally fully recover within a week or two [4]. Although *Varicella* infection usually is a self-limiting childhood disease, in some cases it can lead to very serious and fatal complications, especially in immunocompetent individuals [5]. About 2–6% of patients seeking care from a private general practitioner experience a complication [1]. Herein we report a case of *Varicella zoster* virus with severe skin infection.

### Case Presentation

A 4-year-old boy presented with a 2-day history of fever and multiple popular skin lesions over the trunk and lower limbs. The patients' skin lesion is presented in Figure 1. The fever was low grade with no coryza, cough, or sore throat at first presentation. His sister had a similar problem, and she had been infected by friends at school. The boy was discharged and sent home with symptomatic relief. On the fourth day of illness, the lesions became more prominent, progressively increasing in size and involving the whole body (i.e., upper limbs, lower limbs, and head). Most of the lesions became pustular with a greenish discharge. The lesions also spread into his mouth, so that he could not tolerate any food and was only able to ingest sips of water. This led to fatigue, and he was only able to lie in bed at home. The patient's fever remained on day 4 of illness. Further questioning revealed that the patient also had underlying bronchial asthma and eczema. He had received the Ministry of Health's scheduled immunizations for his age.

Upon examination, the boy was lethargic and moderately dehydrated, with temperature of 41°C. Other vital signs were normal. Generalized and multiple pustular lesions were seen over the trunk, head, upper limbs, and lower limbs, and they released a greenish discharge (Figure 2). The plan of care was to admit the patient for treatment with IV antibiotics, but his mother refused. He was then discharged with the following treatment plan: syrup Augmentin bd dosage, KMnO<sub>4</sub> soak, and Fucidic acid cream to apply over the infected skin lesions. It took about 10 days for the skin lesions to heal.

### Discussion and Conclusion

This case report provides evidence to support the relationship between varicella infection skin lesions with secondary bacterial infection, particularly Group A *Streptococcus* and *Staphylococcus aureus* [1]. In atopic eczema patients, *S. aureus* has a high rate of colonisation (i.e., up to 74.8% of

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**Figure 1:** On day 2 of illness, patient presented with multiple erythematous papules with vesicles and erosion over the trunk.

lesional and 34.5% of non-lesional skin) [7]. This could have been the main source of massive bacterial infection in this patient's new skin lesions caused by the varicella infection.

These bacteria are aggressive pathogens that can affect both healthy and lesional skin (as in skin of patients with varicella and eczema skin lesions). Incidence of serious bacterial soft tissue infections among varicella paediatric patients ranges from 2.6% to 41.2% worldwide [8], and infections such as impetigo, abscess, cellulitis, necrotizing fasciitis, and gangrene lead to hospital admissions of around 40–50% in France and Portugal [2,3].

There are several other possible explanations for why these pathogens seriously affected this child. One study revealed that ingestion of non-steroidal anti-inflammatory drugs (NSAIDs) or paracetamol for at least 3 days may worsen the patients' skin condition [9]. The researchers reported that use of NSAIDs or paracetamol is related to 4.9 (95% CI 2.1, 11.4) and 1.5 (95% CI 1.0, 2.2) increased risk for severe skin and soft tissue complications, respectively. Persistence or recurrence of fever  $\geq 38.5^{\circ}\text{C}$  for 3 or more days after the onset of varicella infection can also exacerbate bacterial skin infections.<sup>[5,6]</sup> Therefore, primary care providers should carefully review the patient's history to avoid lethal complications.

Early antibiotic administration is a mainstay management method to save the lives of patients with skin and soft tissue secondary bacterial infections [10]. Application of  $\text{KMnO}_4$  will help dry out the blisters and prepare the wounds for application of local antibiotic [1]. Surgical drainage of infective foci is also suggested to allow better penetration of locally administered antibiotic cream [1].

Varicella vaccination can reduce the risk of infection and subsequent complications. Those who are vaccinated with a two-dose series of varicella vaccine usually have a mild form of the disease and fewer complications, at about 75% [3]. Unfortunately, varicella vaccination is not part of the routine national immunization schedule in Malaysia, despite the high incidence of the disease (1.89 per 100,000 people in Kuala Lumpur in 2001, with four reported deaths in 1995) [9]. It is important to consider for those 12 years above due to seroconversion issues [10], which is defeat the purpose for those below that age.

In summary, a high degree of cutaneous colonisation by Group A *Streptococcus* and *S. aureus* from eczematous skin lesions



**Figure 2:** On day 4 of illness, the skin lesions worsened with multiple erythematous papulopustular lesions and erosions over the trunk and upper limbs.

superimposed with paracetamol intake and high grade fever may have caused the observed serious skin and soft tissue infections in this child.

Anticipating these risks at the very early stage of infection is crucial. This report highlights that early referral to a dermatologist can help to prevent unusual and lethal complications.

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