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Clinical Features and Therapeutic Approach of Varicella Zoster in a Pediatric Patient at Way Laga Health Center, Bandar Lampung, Indonesia

Ringgo Alfarisi¹, Tri Aprilia Aisyah^{2*}, Tri Marezha Balqis², Tria Zulfadlia², Syifa Syahirah Azzahra², Syerli Saputri²

¹ Faculty of Medicine, Malahayati University Bandar Lampung, Indonesia

² Medical Study Program, Malahayati University Bandar Lampung, Indonesia

* Correspondence: triapriliaaisyah@gmail.com

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Abstract

Varicella, or chickenpox, is an acute infectious disease caused by the Varicella-Zoster Virus (VZV), a DNA virus of the Herpesviridae family. Despite being generally self-limiting in children, varicella remains a major public health concern due to its high transmissibility and potential complications in vulnerable populations. In Indonesia, the incidence of varicella has increased in recent years, particularly among school-aged children, reflecting gaps in vaccination coverage and heightened community mobility following the COVID-19 pandemic. This research presents the clinical features and therapeutic approach of a pediatric patient with varicella treated at Way Laga Health Center, Bandar Lampung. A 6-year and 11-month-old boy developed fluid-filled lesions that initially appeared on the trunk and subsequently spread to the face, arms, and legs within two days, accompanied by pruritus and mild fever. The patient had no comorbidities or allergies, but a clear history of close contact with a classmate diagnosed with chickenpox was identified as the primary source of infection. Physical examination revealed multiple lesions at different stages of development without secondary bacterial infection, while vital signs remained stable. Therapeutic management included acyclovir, cetirizine syrup, paracetamol, and salicylic powder, combined with non-pharmacological interventions such as hygiene education, avoidance of scratching, adequate hydration, and temporary isolation to prevent transmission. Family-focused counseling emphasized the importance of monitoring for complications and maintaining supportive care. The patient responded favorably, with resolution of fever, reduction of pruritus, and crusting of lesions within one week. This study highlights the critical role of primary health centers in the early identification and management of varicella in pediatric populations. The novelty of this research lies in demonstrating how structured holistic diagnostics, timely antiviral therapy, and standardized family education can effectively reduce symptom burden, prevent complications, and limit community transmission. Such documentation provides valuable insights for strengthening clinical practice and public health preparedness in regions with uneven vaccine coverage.



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1. Introduction

Varicella, commonly known as chickenpox, is an acute infectious disease caused by the Varicella-Zoster Virus (VZV), a DNA virus of the Herpesviridae family that establishes latency in sensory nerve ganglia after primary infection (Arvin, 1996). The disease is characterized by polymorphic skin lesions macules, papules, vesicles, and crusts with a centripetal distribution, accompanied by fever and pruritus. Although varicella is generally self-limiting in children, its high transmissibility and potential complications make it a significant public health concern worldwide (Gershon et al., 2015). Globally, varicella remains endemic despite the availability of effective vaccines. Before widespread vaccination programs, nearly 90% of individuals contracted varicella by adolescence (Heininger & Seward, 2006). Countries with high vaccine coverage have reported dramatic declines in incidence, yet outbreaks still occur in communities with incomplete immunization, highlighting the importance of continuous surveillance and reporting (Marin et al., 2007; Vázquez et al., 2001).

In Indonesia, varicella is among the most frequently encountered infectious diseases in primary health care facilities. Epidemiological studies have shown seasonal variations in incidence, with peaks during periods of high community interaction such as school terms (Widodo, 2021). The COVID-19 pandemic further disrupted routine immunization programs, leading to an increase in varicella cases among children and adults in the past five years (Rahmawati, 2020). This resurgence underscores the need for vigilance in primary health services. Transmission of VZV occurs primarily through respiratory droplets and direct contact with vesicular fluid. The virus is highly contagious, with secondary

attack rates exceeding 90% in susceptible household contacts (Seward et al., 2002). Crowded environments, such as schools and densely populated neighborhoods, facilitate rapid spread. In pediatric populations, school exposure remains a major driver of transmission (Gabutti et al., 2016).

Pathogenesis begins with viral entry through the upper respiratory mucosa, followed by replication in the nasopharynx and regional lymph nodes. Primary viremia disseminates the virus to the reticuloendothelial system, and secondary viremia leads to widespread skin involvement (Gnann & Whitley, 2002). The hallmark vesicular rash reflects viral replication in epidermal cells. After primary infection, VZV establishes latency in sensory nerve ganglia, with potential reactivation later in life as herpes zoster (Leung et al., 2011). Risk factors for varicella infection include incomplete immunization, close contact with infected individuals, and living in crowded environments (Kurniasih, 2023). In adults, additional factors such as comorbidities, stress, fatigue, and poor sleep patterns can exacerbate disease severity (Mohsen & McKendrick, 2003). Children, although generally experiencing milder disease, remain vulnerable to secondary bacterial infections due to scratching of lesions (Sauerbrei & Wutzler, 2004).

Complications of varicella are more common in adults, infants, pregnant women, and immunocompromised individuals. Reported complications include varicella pneumonia, encephalitis, hepatitis, and secondary bacterial skin infections (Hidayat, 2021). In Indonesia, recent studies indicate that 18–22% of adult varicella patients develop complications, highlighting the importance of early diagnosis and intervention (Sari, 2024). Management of varicella is primarily supportive in healthy children, including rest, hydration, antipyretics, and antihistamines (Gnann & Whitley, 2002). However, antiviral therapy such as acyclovir is recommended for adults, immunocompromised patients, and those at risk of severe disease (Mohsen & McKendrick, 2003). Early administration of acyclovir has been shown to shorten disease duration, reduce lesion severity, and prevent complications (Chaves et al., 2007). Education on hygiene and isolation is equally critical to prevent transmission (Bonanni et al., 2009).

Vaccination remains the most effective preventive measure against varicella. Countries with universal varicella immunization programs have reported significant reductions in hospitalizations and mortality (Kuter et al., 2004). In Indonesia, however, varicella vaccination is not yet part of the national immunization schedule, resulting in uneven coverage and continued outbreaks (Pulungan & Mellaratna, 2023). This gap emphasizes the importance of case documentation to inform policy and clinical practice.

This research presents the clinical features and therapeutic approach of a pediatric patient with varicella treated at Way Laga Health Center, Bandar Lampung. The study aims to highlight the clinical presentation, management, and outcomes of varicella in a primary care setting. By documenting this case, the research contributes to the growing body of evidence on varicella epidemiology and management in Indonesia, and underscores the importance of holistic diagnosis, family education, and preventive strategies in reducing disease burden (Prasetyo, 2022).

2. Materials and Methods

A pediatric patient aged 6 years and 11 months was evaluated at Way Laga Health Center, Bandar Lampung, following complaints of fluid-filled lesions and pruritus for two days, accompanied by mild fever. The lesions initially appeared on the trunk and subsequently spread to the face, arms, and legs. A confirmed history of close contact with a classmate diagnosed with chickenpox was identified as the primary source of infection.

2.1. Clinical Assessment

History taking: Detailed anamnesis was performed to identify onset, progression of lesions, associated symptoms, and risk factors. No comorbidities, allergies, or prior similar illness were reported. **Family history:** was negative for chronic diseases. **Physical examination:** Vital signs were stable (BP 88/43 mmHg, pulse 88/min, respiratory rate 16/min, temperature 37.8°C, SpO₂ 99%). Anthropometric measurements indicated normal growth (height 109 cm, weight 19.7 kg, BMI 16.6 kg/m²). Skin examination revealed polymorphic lesions (macules, papules, vesicles) at different stages, distributed on the trunk, face, arms, and legs, without evidence of secondary bacterial infection. Other systemic examinations were unremarkable. **Holistic diagnostics:** Assessment included personal, clinical, internal, external, psychological, and functional aspects to evaluate the patient's overall condition and risk profile.

2.2. Intervention

Pharmacological therapy: Acyclovir 400 mg (4×1), cetirizine syrup 5 mg/ml (1×1), paracetamol 500 mg (3×½), and salicylic powder 2% (3×1) were prescribed. **Non-pharmacological measures:** Education on hygiene, avoidance of scratching, adequate hydration, balanced nutrition, and temporary isolation to prevent transmission. **Family counseling:** emphasized monitoring for complications and adherence to therapy. **Ethical considerations:** Informed consent was obtained from the patient's guardian for treatment and documentation. Patient confidentiality was maintained according to international ethical standards for case reporting (Sauerbrei & Wutzler, 2004).

3. Results and Discussion

The pediatric patient presented within 48 hours of rash onset, allowing for timely clinical assessment and therapeutic intervention. The polymorphic nature of the lesions macules, papules, vesicles, and crusts distributed in a centripetal pattern, alongside mild fever and pruritus, provided a classical presentation of varicella. The absence of comorbidities, stable vital signs, and lack of secondary bacterial infection supported outpatient management. Importantly, the history of close contact with a classmate diagnosed with chickenpox reinforced the epidemiological link and confirmed the high transmissibility of VZV in school environments, consistent with global data indicating secondary attack rates exceeding 90% in enclosed settings (Seward et al., 2002).

Clinical diagnosis was made without laboratory confirmation, relying on morphological features and exposure history. This approach aligns with recommendations for primary care settings, where typical presentations in immunocompetent children do not necessitate virological testing (Gnann & Whitley, 2002). The decision to initiate acyclovir therapy early within the first 72 hours of rash onset was based on evidence that antiviral treatment can reduce lesion formation, shorten disease duration, and prevent complications, especially in pediatric patients with high exposure risk (Chaves et al., 2007). The patient's favorable response, marked by resolution of fever and crusting of lesions within one week, supports the efficacy of this approach. Beyond pharmacological management, the case highlights the importance of structured non-pharmacological interventions. Hygiene education, hydration, scratch avoidance, and temporary isolation were emphasized during family counseling. These measures not only reduced the risk of secondary infection but also prevented intra-household transmission, as no secondary cases were reported during follow-up. This outcome underscores the value of standardized education protocols in primary care, particularly in communities with limited access to vaccination and high population density.

A notable aspect of this case was the application of holistic diagnostics, which extended beyond biomedical parameters to include psychosocial and environmental factors. The child's sleep disturbance due to nocturnal pruritus, the crowded living environment, and the psychological impact of isolation were addressed through tailored counseling. This multidimensional approach reflects a growing recognition that effective pediatric care must integrate clinical, behavioral, and contextual insights especially in infectious diseases with high social visibility like varicella.

The novelty of this report lies in its operational demonstration of how primary health centers can implement time-sensitive, risk-stratified management of varicella using limited resources. The use of a diagnostic flowchart, structured education checklist, and follow-up schedule enabled efficient care delivery without compromising safety. In the post-pandemic context, where routine immunization coverage has declined and school-based transmission has resurged, such models are increasingly relevant. This case provides a micro-level snapshot of how frontline services can adapt to evolving epidemiological challenges through pragmatic, evidence-informed strategies. Furthermore, the case contributes to the understanding of varicella dynamics in Indonesia, where the vaccine is not yet part of the national immunization program. Documentation of typical cases with successful containment and recovery reinforces the argument for integrating varicella vaccination into routine schedules, especially in urban and peri-urban areas with high child density. It also supports the development of clinical decision tools tailored to local contexts, enabling health workers to triage, treat, and educate effectively.

This case exemplifies the potential of primary care to manage varicella holistically, combining early antiviral therapy with structured education and contextual diagnostics. The integration of clinical precision, family engagement, and operational tools offers a replicable model for other health centers facing similar challenges. By documenting not only the clinical trajectory but also the management logic and community impact, this report advances both practice and policy in pediatric infectious disease care.

4. Conclusions

Varicella remains a highly transmissible pediatric infection with significant implications for both clinical practice and public health. The case presented demonstrates that accurate diagnosis can be achieved through careful clinical observation and epidemiological linkage, even in the absence of laboratory confirmation. Early initiation of antiviral therapy, combined with supportive measures and structured family education, proved effective in reducing symptom burden, preventing complications, and limiting household transmission. The novelty of this study lies in its operational demonstration of how primary health centers in Indonesia can integrate holistic diagnostics, risk-stratified management, and standardized education protocols into routine care. By documenting not only the clinical trajectory but also the management framework and community impact, this research contributes to strengthening evidence-based strategies for pediatric infectious disease control in resource-limited settings. Furthermore, the findings underscore the urgent need to address gaps in varicella vaccination coverage. In the post-pandemic era, where disrupted immunization programs have heightened susceptibility among school-aged children, frontline documentation such as this provides valuable insights for policymakers. Integrating varicella vaccination into national schedules, alongside reinforcing primary care protocols, could substantially reduce disease incidence and transmission. This research highlights the critical role of primary health centers in bridging clinical care and public health preparedness. The integration of timely antiviral therapy, holistic diagnostic frameworks, and family-centered education offers a replicable model for managing varicella in similar contexts. Such approaches not only improve patient outcomes but also strengthen community resilience against preventable infectious diseases.

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Informed Consent Statement: Written informed consent has been obtained from the patient's guardian to publish this case report, including clinical details and images.

Data Availability Statement: All data supporting the findings of this study are contained within the article. No additional datasets were generated or analyzed.

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Conflicts of Interest: All the authors declare that there are no conflicts of interest.

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