GEORGIAN BIOMEDICAL NEWS

VOLUME 3 ISSUE 1. JAN-MAR 2025

Chickenpox Complicated by Cellulitis and Systemic Inflammatory Response Syndrome (SIRS) in a Pediatric Patient: A Case Report

Nino Tamarashvili[1], Rusudan Gudjabidze[1], Nino Vardosanidze[2,ID]

DOI: 10.52340/GBMN.2025.01.01.96

ABSTRACT

Chickenpox is typically mild in healthy children, but it can lead to severe complications. We report the case of a 3-year-old girl who developed a secondary bacterial infection and systemic inflammatory response syndrome following chickenpox. After presenting with fever, vomiting, and a polymorphous rash, her condition worsened with dehydration, respiratory symptoms, and lymphadenopathy. Despite initial symptomatic treatment, she developed cellulitis and systemic inflammation, requiring the addition of acyclovir and antibiotics. Surgical intervention was eventually required due to the worsening cellulitis. The patient recovered after 11 days of hospitalization, emphasizing the importance of early recognition and intervention in managing complications of varicella.

Keywords: Cellulitis; chickenpox; systemic inflammatory response syndrome (SIRS).

INTRODUCTION

Chickenpox is a highly contagious viral infection caused by the varicella-zoster virus (VZV), typically affecting children and presenting as a polymorphous rash, fever, and malaise. While the disease is usually mild in healthy children, it can sometimes lead to serious complications such as bacterial skin infections, pneumonia, and encephalitis.[1,2] Although the varicella vaccine has significantly reduced the incidence of severe complications, chickenpox still poses a significant risk, especially among unvaccinated individuals and those with compromised immune systems.[3,4] In Georgia, however, immunization against varicella is not part of the national immunization calendar. Secondary bacterial infections, such as cellulitis, are common complications of chickenpox and can exacerbate the clinical condition, leading to more severe outcomes.[1,2] Early intervention with antivirals, antibiotics, and supportive care is critical to prevent morbidity and mortality associated with these complications.

In this case, the patient developed Systemic Inflammatory Response Syndrome (SIRS). This serious condition arises when the body's inflammatory response to an infection or stressor becomes exaggerated, often leading to organ failure or, in some cases, death.[5] The patient's condition met the criteria for SIRS, as evidenced by fever, tachycardia, elevated white blood cell count, and respiratory distress. This progression highlights the importance of early diagnosis and intervention to prevent severe complications, such as multi-organ dysfunction syndrome (MODS).[6]

CASE

A 3-year-old girl was brought to the clinic 6 days after the onset of symptoms following close contact with a sibling diagnosed with chickenpox. The patient initially presented with high fever, vomiting, and a polymorphous rash, which spread from the scalp to the body. Despite symptomatic treatment at home, her condition worsened with bilateral cervical and submandibular lymphadenopathy, more prominent on the left side. The rash continued to spread, and her general condition deteriorated with lethargy, poor appetite, and refusal to eat or drink, leading to dehydration. Upon admission, she was febrile and lethargic and showed signs of respiratory distress, including nasal obstruction, dry cough, and epistaxis. Physical examination revealed pale skin, dry lips, severe edema, hyperemia in the upper thoracic region, and limited neck movement on the left side. Laboratory tests showed leukocytosis (14.1 x 10^9/L), elevated ESR (35 mm/h), and neutrophilia, prompting the initiation of antibiotic therapy and rehydration. The patient also met Systemic Inflammatory Response Syndrome (SIRS) criteria, as evidenced by fever, tachycardia, elevated white blood cell count, and respiratory distress.

On the second day of hospitalization, cellulitis was suspected due to worsening skin findings and swelling in the

upper thoracic region, and acyclovir was added to the treatment regimen. (Fig.1) By day five, laboratory results indicated anemia (HGB 85 g/L), persistent leukocytosis (16.56 x 10^9/L), and elevated CRP (116.5 mg/L). The patient's condition continued to worsen, and the addition of clindamycin and further imaging indicated soft tissue involvement. A surgical consultation was requested, and a soft tissue and abdominal ultrasound were performed.

FIGURE 1. Cellulitis in the thoracic region

By day 7, cellulitis had worsened, and an abscess dissection was performed. Following the procedure, drainage was established, and the patient showed improvement with reduced swelling and decreased systemic inflammation. By day 11, the patient's condition stabilized, with typical vital signs, improved appetite, and reduced lymphadenopathy. Laboratory values normalized, and the patient was discharged.

DISCUSSION

This case highlights the serious potential complications associated with chickenpox. Although chickenpox typically resolves without medical intervention in healthy children, secondary bacterial infections like cellulitis are common and can lead to severe outcomes. The progression from a mild case of chickenpox to a complicated illness requiring hospitalization emphasizes the need for close monitoring of secondary infections, particularly in unvaccinated children or those with underlying health conditions.[2,3]

In our patient, cellulitis in the thoracic region likely resulted from bacterial superinfection of vesicular lesions. The patient's fever, lymphadenopathy, and worsening skin changes in the context of primary varicella infection were consistent with systemic inflammation, necessitating escalation of care. Prompt intervention with antiviral and antimicrobial therapy, as well as surgical intervention, when necessary, can significantly improve outcomes in complicated cases of chickenpox.[2]

Early identification of SIRS is critical to avoid life-threatening complications. Hydration and supportive care are also crucial, as dehydration can worsen the clinical course and complicate treatment.[5] In severe cases like this, where the patient's condition deteriorated rapidly, initiating intravenous therapy and monitoring for signs of sepsis or organ dysfunction became essential.

CONCLUSIONS

This case of a 3-year-old girl highlights the severity of complications that can arise from chickenpox, including secondary bacterial infections, systemic inflammation, and the development of Systemic Inflammatory Response Syndrome (SIRS). Early recognition and timely intervention are crucial to preventing progression to serious outcomes. Even in otherwise healthy children, chickenpox can result in significant complications if not properly managed. This case underscores the importance of vaccination and early medical intervention in managing pediatric varicella infections and the need for comprehensive immunization programs, especially in regions where the varicella vaccine is not part of the national immunization schedule.

AUTHOR AFFILIATIONS

[1]Tbilisi Central Hospital, Geo Hospitals, Tbilisi, Georgia;
[2]Medical Genetics and Laboratory Diagnostics Center, Tbilisi, Georgia.

INFORMED CONSENT

Informed consent, signed by the patient's parents, was obtained to publish this case report.

REFERENCES

1. Gershon AA, Weinberg A, Breuer J. Varicella-zoster virus infections: an overview. Clin Microbiol Rev. 2004;17(1): 52-62.
2. Whitley RJ, Soong SJ, McManus D, et al. Varicella-zoster virus infection: a review of treatment and clinical outcomes. Am J Clin Dermatol. 2018;19(4):453-464.
3. Brunell PA, Good RA, McNally T. Epidemiology of chickenpox and varicella-zoster virus infection. Pediatr Infect Dis J. 2016;35(7):716-723.
4. McNeil S, Monto AS, Bennet S. Varicella-zoster virus and its complications in children. Pediatr Infect Dis J. 2021;40(5):E159-E166.
5. Cleveland Clinic. Systemic Inflammatory Response Syndrome (SIRS). Available at: https://my.clevelandclinic.org/health/diseases/25132-sirs-systemic-inflammatory-response-syndrome.
6. PMC2670291. Prevalence of SIRS in hospitalized children with fever. Available at: https://pmc.ncbi.nlm.nih.gov/articles/PMC2670291/#:~:text=In%20our%

ISSN (Online): 2720-8796 ISSN (Print): 2720-7994

20study%2C%20the%20prevalence,children%20with%20fever%20was%2072%25.

Georgian Biomedical News
ISSN (Online): 2720-8796 ISSN (Print): 2720-7994