

Chickenpox with Cervical Lymphadenopathy in a Paediatric Patient

Aishwarya E. Mammen¹, Anupriya Jose¹, Govind S. Chaudhary¹,
Mannu Jaiswar¹, Aparna Shahapurkar², Dr. Preeti kulkarni³, Dr V.H kulkarni⁴

¹Pharm D Interns, Department of pharmacy practice, SET's college of pharmacy, Dharwad, Karnataka

²Assistant Professor, Department of pharmacy practice, SET's college of pharmacy, Dharwad, Karnataka

³Head of Department, Department of pharmacy practice, SET's college of pharmacy, Dharwad, Karnataka

⁴Principal, SET's college of pharmacy, Dharwad, Karnataka –580002, India

Corresponding Author: Aishwarya. E. Mammen

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ABSTRACT

Chickenpox is an infectious disease mainly caused by varicella zoster virus (VZV). Cervical lymphadenopathy is a common problem encountered in pediatric patients and is mostly attributable to bacterial and viral infectious etiologies. Vesicular rash, headache, fever, and myalgia lasting up to 10 days are some of the most usual symptoms of this condition. Here, we have described a case of a 5 year old girl, suffering from chicken pox along with cervical lymphadenopathy.

Keywords: Chickenpox, Cervical Lymphadenitis, Varicella zoster virus, Cytomegalovirus, Epstein-Barr virus, Bartonella

INTRODUCTION

Chickenpox is an infectious disease mainly caused by varicella zoster virus (VZV). The varicella-zoster virus (VZV) causes two distinct clinical infectious diseases, chickenpox (varicella) and shingles (zoster).^[1] Chickenpox is most frequently seen in children under the age of 10 years. The virus is released from the nasopharynx for up to 5 days before the rash develops, so the first signs of chickenpox may resemble cold symptoms. Fever, a slight headache, and myalgia. The majority of children who have chickenpox have mild, self-limiting infections and recover without any complications.^[2] The trunk and, to a lesser extent, the limbs develop clusters of these vesicular lesions, which are extremely itchy and resemble fluid-filled blisters. It is possible to be infected but not exhibit any symptoms because infection intensity varies. In individuals with compromised immunity, an infection may last longer.^{[2][1]} Adults tend

to suffer more severely than children. Adult infection is associated with complications like pneumonia, hepatitis, and encephalitis.^{[2][2]} There are also some rare complications like septicemia, Disseminated Intravascular Coagulation (DIC). Chickenpox is spread through respiratory droplet infection, like many pediatric illnesses.^{[1][2]} Following the development of viraemia, it travels to the skin through the lymphatic and circulatory systems, where it results in a distinctive vesicular rash. However, until they crust over, chickenpox lesions produce an infectious virus.^[1]

Lymphadenopathy is a disease process that involves lymph nodes that are abnormal in consistency and size.^[4] Lymphadenitis refers specifically to lymphadenopathies which are caused due to inflammatory processes.^{[4][1]} Cervical lymphadenopathy is an abnormal enlargement of lymph nodes (LNs) in the head and neck usually >1 cm. Cervical lymphadenopathy is a common problem

encountered in pediatric patients and is mostly attributable to infectious etiologies.^{[4][1]} The exact incidence of lymphadenopathy is unknown, but the number varies from 38-45%.^{[4][2]}

There are commonly 4 types of cervical lymphadenopathy based on clinical presentation

1. Acute unilateral: the most common form of cervical lymphadenopathy, it is usually reactive, and secondary to upper respiratory tract infection (URTI)
2. Acute bilateral: This type of lymphadenitis occurs secondary to viral URTI, Epstein-Barr virus (EBV), and cytomegalovirus (CMV).
3. Sub-acute: The common cause for this is Mycobacterium tuberculosis.
4. Chronic: This can be reactive in process secondary to neoplasia, lymphoma, leukemia, or soft tissue tumors.^{[4][3]}

Other such complicated infectious etiologies in children are Acute viral lymphadenitis-most common form of reactive lymphadenopathy and usually develops from upper respiratory tract infection(URTI), Acute bacterial lymphadenitis-This include infection due to various pathogens such as Streptococcus pyogens or staphylococcus aureus, Cat Scratch disease-a lymphocutaneous syndrome caused by bacterial infection with species Bartonella h., a gram-negative rickettsial organism, toxoplasmosis-lymphadenitis most commonly caused by toxoplasma Gondi, other infectious diseases include mycobacterium tuberculosis, Sarcoidosis, malignancies.^{[4][5]} Here, we report a case of primary varicella zoster infection in an immunocompetent young girl with serious complications.

CASE REPORT

A 5 year old girl previously a healthy child, suffering from chicken pox for the past 5 days was admitted to the paediatric department with complaints of swelling around the neck, left frontal region, and left cheek associated with pain over swelling for 3 days. Additionally, it was noted that the swelling was growing larger. The patient developed fever 5 days back which was insidious in onset, gradually progressive

mild grade, an intermittent type associated with rashes that are fluid-filled, pruritic started first on the abdomen, then progressed to the chest, then to limbs and central umbilicus. On local examination, generalized inflammation of the submandibular region, and the submental region along with abdominal inflammation, left-sided facial puffiness, periorbital edema, eye congestion, and tenderness is seen. The patient's siblings, sister 10 years old and 7 years old had a history of chickenpox which was recovered within 10 days without any complications. Laboratory tests of the patient showed a high CRP level that is positive 1:8; which is 56 mg/L in an undiluted sample (normal value is < 5mg/L). Hematology reports showed a granulocyte count of 78.5% and a low hemoglobin level of 8.4g/dL, a low MCV level of 57.8%, a low MCH level of 20.1%, a low MCHC 35g/dL, a low lymphocyte account 12.9%. CT scan showed an impression of bilateral cervical and axillary lymphadenopathy, diffuse skin, and subcutaneous edema in the bilateral neck region.

The patient's condition worsened at home after 3 days of a mild course of chicken pox. Oral administration of syrup paracetamol 10 ml was given for fever. Most of the vesicular rash was in the healing phase on admission. Later on, taking the account of clinical features suggestive inflammatory markers. The patient was treated with three antibiotics Ceftriaxone sodium (i.v) 75mg/kg/day (for 3 days), piperacillin and tazobactam combination (i.v) 100mg/kg/day (for 5 days), amikacin sulfate (i.v) 15mg/kg/day (for 5 days) for the infection due to lymphadenopathy and chicken pox was symptomatically treated by the use of topical agents such as calamine lotion for rashes as it works as a skin protectant and soothing agent helping with itchiness along with antipyretics and other supportive care.



Figure 1



Figure 2

DISCUSSION

Varicella zoster virus is the main cause of chickenpox, which is a common childhood infectious disease.^[5] According to reports, the disease can cause significant consequences in 3% of cases in children under 15 and 6% of cases in children over 15, including Reye's syndrome, sepsis, aseptic meningitis, encephalitis, and secondary bacterial infections of the skin and lungs. Along with it neurological complications are seen in older children as a complication of immune reaction.^[6] Depending on the geographic region and hospital admission policies, the reported incidence of varicella-related hospitalizations involving children varies significantly around the world, ranging from 0.9 to 29.4/100,000.^{[6][1]}

In our case, the patient's laboratory results show a Low lymphocyte count, which is suggestive of an increased risk of infection and is frequently shown in viral infections. C-reactive protein (CRP) levels are

inflammatory markers that may be elevated in cervical lymphadenopathy (CL) caused by infections (most likely bacterial) or inflammatory causes. Other diagnostic tests were a CT scan and ultrasonography of the neck which showed features suggestive of cervical lymphadenopathy, and diffuse subcutaneous edema over the left cheek and mandibular region. Enlargement of bilateral lymph nodes in the relevant nodal drainage chain during acute infection is the most common cause of acute cervical lymphadenopathy. This is a case of a self-limiting, transient lymphatic tissue hyperplasia response to a local infectious process that gets better as the infection resolves.

Chickenpox is a self-resolving disease in most cases, in severe cases, the use of antiviral medications like acyclovir is advised, but only for those children who are 14 years of age or older and for those who present within 24 hours of rash onset since it shortens the time it takes for lesions to fully crust and decreases the number of lesions. In this case, the patient was under the age of 14 years and was treated symptomatically. The patient was treated with syrup paracetamol for pain and fever along with topical agents such as calamine lotion for the rashes or lesions present in the early stages. Later, tablet chlorpheniramine was added for the itch. A broad-spectrum antibiotic was given i.e injection ceftriaxone for the superadded infection. Cervical lymphadenopathy occurring mostly as part of a reactive process from the viral and bacterial load is treated with empiric antibiotic therapy for 1 to 2 weeks of duration. For further treatment injection piperacillin sodium a combination of piperacillin and tazobactam, a broad-spectrum antibiotic was given to act against both gram-negative, gram-positive, and anaerobic bacteria. And also, an injection amikacin was added to the treatment for control of any superinfection, and intravenous hydration was given. The condition of the patient improved gradually during the hospital stay with no further complications.

CONCLUSION

To minimize the risk of further complications and mortality in children with chickenpox and cervical lymphadenitis, an early examination and choosing the most appropriate course of therapy is essential. Varicella zoster immunoglobulin, or VZIG, is a vaccine that can be administered for prevention. It can be used as a prophylactic in those who have had chicken pox and are at high risk of contracting the virus. This applies to those who are immunosuppressed, infants, and pregnant women.

Declaration by Authors

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REFERENCES

1. Mostofa Kamal Chowdhury, Ashfaque Ahmed Siddique, Md. Manjurul Haque, et al. Life-threatening complications of chickenpox in a young adult. *Journal Of Medicine* Vol. 15, No. 1.
2. Liz Forde, Patricia Coughlan, Niamh McDonnell, et al. Guidelines on Infection Prevention and Control 2012 Varicella (Chickenpox and Shingles). HSE South (Cork & Kerry) Page 1 of 6 Community and Disability Services.
3. A Jaeggi, R P Zurbruegg et Al. Complications of varicella in a defined central European population. *Arch Dis Child* 1998;79:472-477.
4. Sachin Darnel, Trusha Rajda. Cervical Lymphadenopathy in Children-A Clinical Approach. *International Journal of Contemporary Medical Research* Volume 3, Issue 4, April 2016.
5. Gershon A, Breuer J, Cohen J, et al. Varicella zoster virus infection. *Nature Reviews Disease Primers* volume 2015;1(July): 15016.
6. Peter W. Choo, James G. Donahue, JoAnn E et al. The Epidemiology of Varicella and Its Complications. *The Journal of Infectious Diseases*, Volume 172, Issue 3, September 1995, Pages 706-712.
7. Kleber Giovanni Luz, Maria Helena Marques Fonseca de Britto, Domitila Costa de Farias, et al. Mycobacterium fortuitum-related lymphadenitis associated with the varicella-zoster virus. *Revista da Sociedade Brasileira de Medicina Tropical* 47(1):119-121, Jan-Feb, 2014.
8. A. Betkiewicz, M. Fornalczyk, K. Urban, B. et al. Sialadenitis as chickenpox complication in a 6-year-old girl. *IDCases* 23 (2021) e01052.
9. Celik U, Alhan E, Dossaji S, Bayram I, et al. Unexpected complication after varicella: aplastic Anemia. *Pediatric International* 2008;50:395-6.
10. Mark A, Belsey et Al. Tuberculosis and Varicella Infections in Children. *Am J Dis Child*. 1967;113(4):444-448.
11. Mary Lowth. Infectious diseases in children: Chickenpox. A peer-reviewed journal for the primary care nursing team. June 2013.
12. Alexander K.C. Leung, H. Dele Davies. Cervical Lymphadenitis: Etiology, Diagnosis, and Management. *Current Infectious Disease Reports* 2009, 11: 183 - 189
13. Karthik Rajasekaran, Paul Krakovitz. Enlarged Neck Lymph Nodes in Children. *Paediatric Clinics of North America* (2013) 923-936
14. Serena Su Ying Chang¹, Mengfei Xiong², et al. An approach to cervical lymphadenopathy in children. *Singapore Med J* 2020; 61(11): 569-577
15. Ankita Deosthali, Katherine Donches, Michael Delvecchio, et al. Etiologies of Pediatric Cervical Lymphadenopathy: A Systematic Review of 2687 Subjects. *Global Pediatric Health* Volume 6: 1-7

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