

A Febrile Seizure with Mucocutaneous Lymph Node Syndrome: A Rare Case Report

Mr. Gaurav Raut¹, Ruchira Ankar², Pooja Kasturkar³, Aniket Pathade⁴

- 1] Basic B.Sc. Nursing 3rd year, Smt. Radhikabai Meghe Memorial College of Nursing, Datta Meghe Institute of Medical Sciences (Deemed to be University), Sawangi (Meghe), Wardha, Maharashtra, India. Email Id- rautgaurav715@gmail.com
- 2] Department of Medical Surgical Nursing, Smt. Radhikabai Meghe Memorial College of Nursing, Datta Meghe Institute of Medical Sciences (Deemed to be University), Sawangi (Meghe), Wardha, Maharashtra, India.
- 3] Department of Mental Health Nursing, Smt. Radhikabai Meghe Memorial College of Nursing, Datta Meghe Institute of Medical Sciences (Deemed to be University), Sawangi (Meghe), Wardha, Maharashtra, India.
- 4] Research Scientist, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi, Wardha, Maharashtra.

Abstract:

In the course of illness with Kawasaki disease, seizures may happen. Uncertainty persists regarding the characteristics of these convulsions. According to recent research, proinflammatory cytokines can play a vital role in the development of febrile seizures. Blood and CSF levels of proinflammatory cytokines are increased during the initial stage of Kawasaki disease. If cytokines are involved in the seizure occurrences in Kawasaki disease clients, febrile convulsions and seizures may share similar clinical characteristics. A 1 year 4 months-old-child was brought to pediatric intensive care unit by her parents with the presenting complaints of an episode of generalized tonic-clonic seizures and loss of consciousness for around 2 minutes with High grade intermittent fever up to 102°F for three days. He is also dehydrated, irritated and covered in rashes. After all investigation child patient was diagnosed as a case of febrile seizures with Mucocutaneous Lymph Node Syndrome (Kawasaki disease). Now the patient prognosis is better than previous and advice the patient for further treatment.

Keywords: Kawasaki diseases, seizures disorder, fever fit, febrile convulsion, mucocutaneous lymph node syndrome, kawasaki syndrome, febrile seizures

Introduction:

A rare form of systemic inflammation called Kawasaki disease (KD) primarily impacts children under the age of five. (1) It is uncommon to find Kawasaki disease in infants younger than four months, presumably indicating maternal antibodies' protective effects. The prevalence ranges from ten to twenty cases per 100,000 kids under the age of five. (2) The occurrence of febrile seizures in the initial phase of illness may be too much small. It confirms the result of earlier report. Kawasaki disorder is mainly identified by systemic vasculitis and occasionally it may be complicated by intracranial vasculitis (3). In the Kawasaki disease the occurrence of aberrant electroencephalograms and pleocytosis in the cerebrospinal fluid (CSF) is more common in patient (4). Despite central nervous system interaction, the reason why febrile convulsions were absent during the initial stages of Kawasaki disease still seems to be unknown. (5).

Considering the significant prevalence of epilepsy and seizure disorders among children with Kawasaki disease, follow up is advised. (6) The primary aim of treatment for Kawasaki disease is to lower body temperature as well as other inflammatory symptoms because there is no recognised causative factor. Currently, i.v. immunoglobulin treatment to prevent future coronary artery disorders and large doses of enteral acetylsalicylic acid (aspirin) to quicken settlement of the intense symptoms of Kawasaki disease, particularly fever, are recommended as the primary therapies (preferably administered during the first 10 days of the appearance of symptoms). (7)

Case presentation:

A one-year-and-four-month-old male infant got admitted to the paediatric intensive care unit after suffering from high-grade intermittent fevers of up to 102°F for three days, as well as one episode of generalized tonic-clonic seizures and loss of consciousness for two minutes. He is also dehydrated, irritated, and covered in rashes. The doctor employed primary preventative measures.

An initial investigation and a first assessment were conducted. Physical examination revealed that the baby had dryness of skin, a skinny body build, and an almond-shaped mass that was palpable in the right hypochondriac and right upper quadrant areas of the baby's belly. Additionally, unusual bowel sounds were audible, and the child was weak, looked dull, and uncooperative. His laboratory tests showed increased levels of white blood cells and C-reactive protein. (WBC count- 15000/Cumm), Anemia (Hb%-10gm%, total RBC count- 3.25million/Cumm), lymphocytopenia (lymphocytes- 44%). Other laboratory investigation, complete blood count and renal function were all within normal range.

After all investigation child patient was clinically diagnosed as a case of febrile seizures with mucocutaneous lymph node syndrome (Kawasaki disease), and then the patient was treated with IVIG (2 g/kg), aspirin (30 mg/kg/day), He was also started on Inj.Emset 1mg (twice a day intravenously), Tab. Frisium 10mg (twice a day orally), Tab.b-dt 5mg(once a day orally), Syp.Maxtra 2.5ml (thrice a day orally), Syp.becasule 5 ml (once a day orally), Inj.ceftriaxone 400 mg (twice a day intravenously), Inj.amikacine 135 mg (once a day intravenously), also provided appropriate treatment for dehydration as priority i.e. Iv.fluid DNS 400ml (twice a day intravenously) and the infant shows great improvement. On the fourth day of hospitalization patient's vitals were stable. Medical management continued and patient prognosis was good and advised the patient for the regular 15 day follow up.

Discussion:

The exact source of Mucocutaneous Lymph-Node Syndrome(Kawasaki disease) is unknown. The occurrence of familial clusters and a higher prevalence in Asian populations suggest a genetic component. Kawasaki disease is mainly present in young age children. Among 80% of patient are below 4 year age. The peak incidence is occurs at the 9 to 11. Median age was 2 year in the united states.(8-12)The disease occurrence is rare in infant below age 3 month. In one Japanese series mentioned that about 1.7% of patient having age below 3month. A two week old neonate is the youngest patient ever reported in the literature.(13-21)A typical presentation (extended duration of the disease before diagnosis, low prevalence of conjunctivitis, lower prevalence of rash, low c-reactive protein and low occurrence of extremity change) are similar which might delay diagnosis and treatment. Under age of 3 month, the illness is rare but the severe coronary artery disease and the coronary artery involvements is mostly occurs.(22-27)

The child's delayed diagnosis of kawasaki disease was determined to be one major contributing factor to the child's coronary artery anomalies.(28) Furthermore there may some changes occur that are physiological difference among the patient having kawasaki disease at the extremities of pediatric patient that increased risk of coronary complication that are still unknown. Perhaps the youngest patient reported was belong to Turkey.(29-35)

Hemiconvulsion-hemiplegia-epilepsy syndrome and acute right middle cerebral artery blockage aggravate mucocutaneous lymph node syndrome. Various neurological engagements linked to KWD have recently been found. Meningoencephalitis, ptosis, hearing impairment, facial paralysis, seizures, drowsiness, agitation, migraines, and convulsions are a few of those symptoms. Nevertheless, the majority of symptoms disappeared entirely once KWD was successfully treated, and there was no visible medical evidence of CNS damage. Furthermore, our findings demonstrated that children with KWD under the age of five seemed to have an increased chance of seizures. The hypothesis is that a developing brain grows more rapidly from birth to age five compared to any other period in life, and that KWD, a vasculitis that most frequently affects young children, might impact the developing brain and likely quietly modify the shape of the brain at this time, causing epilepsy.(36)

There is currently no defined treatment that is efficient. Serum levels of IL-6, IL-10, and TNF- were higher in KD patients, according to one study, and these cytokines are now linked to early encephalopathy following prolonged febrile seizures. Additional research has shown that cerebral vasculitis-caused focused disruption of the vascular system may be the source of the central nervous system problems linked to KD. I.V immunoglobulin is used as the first therapeutic strategy for acute illnesses, following aspirin. Children are given two rounds of intravenous immunoglobulin, either with corticosteroids or other adjuvant therapies, when there is no improvement after management, whether or not there was a response. (36)

Conclusion:

Given that Kawasaki disease (KD) is a systemic vasculitis illness that is typically febrile, frequently associated with aseptic meningitis, and typically occurs in children below five years of age, it is expected that a significant fraction of KD individuals might experience febrile convulsions. The much more frequent type of paediatric seizure is febrile seizures. Children having Kawasaki illness can develop hyperthermia, swollen forearms with epidermal peeling, red eyes and tongue, cardiac abnormalities, and neurological dysfunction like hemiplegia, seizures, and myositis. As a result, it's crucial to keep a watchful eye on kids who have suffered from Kawasaki disease to ensure they're recovering and to look out for problems. When Kawasaki disease is treated, the majority of kids heal without experiencing any major issues. When Kawasaki disease is treated within ten days following manifestation, the majority of kids improve without experiencing any major issues. There is no transmission of Kawasaki disease. Members of the family or youngsters in daycare facilities are not affected. In this case, the patient was treated with the usual course of care in the beginning phases, which included fluid resuscitation, immunoglobulin immunotherapy, antipyretics, antibiotics, anticonvulsants, and anti-nausea medications. The patient's prognosis remains good.

References:

1. Rife E, Gedalia A. Kawasaki Disease: an Update. *Curr Rheumatol Rep.* 2020;22(10):75.
2. Owens AM, Plewa MC. Kawasaki Disease. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 [cited 2022 Aug 9]. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK537163/>
3. Son MB, Sundel RP. Kawasaki Disease. *Textb Pediatr Rheumatol.* 2016;467.
4. Liu X, Zhou K, Hua Y, Wu M, Liu L, Shao S, et al. Neurological involvement in Kawasaki disease: a retrospective study. *Pediatr Rheumatol.* 2020 Jul 14;18(1):61.
5. Yoshikawa H, Abe T. Febrile convulsion during the acute phase of Kawasaki disease. *Pediatr Int.* 2004;46(1):31–2.
6. Lin CH, Lai JN, Lee IC, Chou IC, Lin WD, Lin MC, et al. Association Between Kawasaki Disease and Childhood Epilepsy: A Nationwide Cohort Study in Taiwan. *Front Neurol [Internet].* 2021 [cited 2022 Aug 9];12. Available from: <https://www.frontiersin.org/articles/10.3389/fneur.2021.627712>
7. Taubert KA, Shulman ST. Kawasaki Disease. *Am Fam Physician.* 1999 Jun 1;59(11):3093–102.
8. Uehara R, Belay ED. Epidemiology of Kawasaki Disease in Asia, Europe, and the United States. *J Epidemiol.* 2012;22(2):79.
9. Simonsen KA, Anderson-Berry AL, Delair SF, Davies HD. Early-Onset Neonatal Sepsis. *Clin Microbiol Rev.* 2014 Jan;27(1):21.
10. Newburger JW, Takahashi M, Gerber MA, Gewitz MH, Tani LY, Burns JC, et al. Diagnosis, Treatment, and Long-Term Management of Kawasaki Disease. *Circulation.* 2004 Oct 26;110(17):2747–71.
11. Gordon JB, Kahn AM, Burns JC. When children with Kawasaki disease grow up: Myocardial and vascular complications in adulthood. *J Am Coll Cardiol.* 2009 Nov 17;54(21):1911.
12. Thangathurai J, Kalashnikova M, Takahashi M, Shinbane JS. Coronary Artery Aneurysm in Kawasaki Disease: Coronary CT Angiography through the Lens of Pathophysiology and Differential Diagnosis. *Radiol Cardiothorac Imaging [Internet].* 2021 Oct [cited 2021 Dec 26];3(5). Available from: <https://www.ncbi.nlm.nih.gov/labs/pmc/articles/PMC8581589/>
13. Abe Y, Ayusawa M, Kawamura K, Yonezawa R, Kato M, Komori A, et al. A combination therapy for Kawasaki disease with severe complications: a case report. *Open Med.* 2020 Jan 1;15(1):8–13.
14. Saguil A, Fargo M, Grogan S. Diagnosis and Management of Kawasaki Disease. *Am Fam Physician.* 2015 Mar 15;91(6):365–71.
15. Chaware, SachinHaribhau, SurekhaGodbole Dubey, Vinay Kakatkar, Ajit Jankar, Swati Pustake, and Abhishek Darekar. “The Systematic Review and Meta-Analysis of Oral Sensory Challenges in Children and Adolescents with Autism Spectrum Disorder.” *Journal of International Society of Preventive and Community Dentistry* 0, no. 0 (2021): 0. <https://doi.org/10.4103/jispcd.JISPCD.135.21>.
16. Chhabadia, Gazal. “COVID-19 Pandemic: Health Impact and Social Responsibility.” *Journal of Pharmaceutical Research International*, July 21, 2021, 68–74. <https://doi.org/10.9734/jpri/2021/v33i38A32061>.
17. Chimurkar, Vilas K., Vaibhav Anjankar, Prajakta Ghewade, and Anil J. Anjankar. “Morphometric Study of Cadaveric Spleen in Vidarbha Region.” *Journal of Pharmaceutical Research International*, December 9, 2021, 132–37. <https://doi.org/10.9734/jpri/2021/v33i54A33728>.

18. Chintalwar, Kunal, and Swaroopa Chakole. "COVID-19 Mutation and Impact on Various Organs." *Journal of Pharmaceutical Research International*, July 14, 2021, 85–91. <https://doi.org/10.9734/jpri/2021/v33i37A31983>.
19. Chitale, Neha, Deepali Patil, and Pratik Phansopkar. "Efficacy of Integrated Neuromuscular Inhibition Technique Versus Mulligan Mobilization on Pain and Functional Disability in Subjects with Non-Specific Low Back Pain –A Research Protocol." *Journal of Pharmaceutical Research International*, September 28, 2021, 99–104. <https://doi.org/10.9734/jpri/2021/v33i45A32719>.
20. Chitale, Neha Vinay, and Mitushi Kishor Rao Deshmukh. "Tethering of the Spinal Cord in Cervical Region in Adult Male Patient." *Pan African Medical Journal* 40 (2021). <https://doi.org/10.11604/pamj.2021.40.20.31405>.
21. Chitale, Neha Vinay, and Pratik Arun Phansopkar. "A Complicated Case of Open Wound Managed by Platelet Rich Plasma." *Pan African Medical Journal* 39 (2021). <https://doi.org/10.11604/pamj.2021.39.238.29867>.
22. Chitalkar, Pratiksha, Rakesh Kumar Jha, and Dhruva Hari Chandi. "Case Study of Polycystic Ovary Syndrome -An Overview." *Journal of Pharmaceutical Research International*, July 29, 2021, 56–60. <https://doi.org/10.9734/jpri/2021/v33i39A32141>.
23. Choubisa, Chitrakshi A., Vishnu Vardhan G. D., and Ashish Bele. "Impact of Therapeutic Ultrasound and Myofascial Release Technique on Quality of Life of Students Having Neck Pain Following Virtual Learning." *Journal of Pharmaceutical Research International*, September 25, 2021, 466–73. <https://doi.org/10.9734/jpri/2021/v33i44B32698>.
24. Choudhari, Sonali G., Abhay M. Gaidhane, Priti Desai, Tripti Srivastava, Vedprakash Mishra, and Syed Quazi Zahiruddin. "Applying Visual Mapping Techniques to Promote Learning in Community-Based Medical Education Activities." *BMC Medical Education* 21, no. 1 (December 2021): 210. <https://doi.org/10.1186/s12909-021-02646-3>.
25. Choudhary, Amruta. "Adolescent Clinic—Need of the Era." *Bioscience Biotechnology Research Communications* 14, no. 6 (June 15, 2021): 41–44. <https://doi.org/10.21786/bbrc/14.6.9>.
26. Choudhary, Srishti. "A Review on Measures for Prevention of Community Transmission of COVID-19." *Bioscience Biotechnology Research Communications* 14, no. 6 (June 15, 2021): 214–19. <https://doi.org/10.21786/bbrc/14.6.45>.
27. Chowdhury, Debolina, P. S. Patil, and P. B. Behere. "A Preliminary Report on Relationship between the Subtypes of Early Life Stressor and Clinical Depression." *Journal of Pharmaceutical Research International*, July 17, 2021, 16–22. <https://doi.org/10.9734/jpri/2021/v33i37B32015>.
28. Chunchuwar, Manasi D., Bharat Rathi, Anita Wanjari, and Renu Rathi. "Pharmaceutical Standardization and Drug Dosage Modification of Laghu Sudarshan Churna with Comparative Assessment of Its Antipyretic and Analgesic Activities in Albino Rats." *Journal of Pharmaceutical Research International*, October 5, 2021, 130–37. <https://doi.org/10.9734/jpri/2021/v33i45B32789>.
29. Chutia, Happy, Tripti Srivastava, and Himashree Bhattacharyya. "Introduction of Class Room Quality Circles among 1st Year MBBS Students and Its Effect on Students Learning." *Journal of Education and Health Promotion* 10, no. 1 (2021): 20. https://doi.org/10.4103/jehp.jehp_412_20.
30. "COVID-19: Lessons from the Pandemic." *Bioscience Biotechnology Research Communications* 14, no. 6 (June 15, 2021): 130–33. <https://doi.org/10.21786/bbrc/14.6.30>.
31. Dabhekar, Praful R., and Rupali Naik. "Study on Work Safety for Employees in Radiology Department." *Journal of Pharmaceutical Research International*, December 15, 2021, 353–58. <https://doi.org/10.9734/jpri/2021/v33i58A34126>.
32. Dadlani, Mohit, Ankit Jaiswal, Kiran Saoji, and Gajanan Pisulkar. "An Unusual Presentation of Foreign Body Granuloma of Ankle Mimicking a Neoplastic Lesion." *Journal of Evolution of Medical and Dental Sciences* 10, no. 20 (May 17, 2021): 1547–50. <https://doi.org/10.14260/jemds/2021/322>.
33. Dafal, Akshay, Sunil Kumar, Sachin Agrawal, Sourya Acharya, and Apoorva Nirmal. "Admission Anion Gap Metabolic Acidosis and Its Impact on Patients in Medical Intensive Care Unit." *Journal of Laboratory Physicians* 13, no. 02 (June 2021): 107–11. <https://doi.org/10.1055/s-0041-1726568>.
34. Daga, Shreya, Rashmi Walke, Pallavi R. Bhakaney, Vishnuvardhan, Ruhi Kumbhare, and Moli Jain. "Effectual Physiotherapy Treatment in a 16 Year Old Case of Atrial Septal Defect- A Single Case Study." *Journal of Pharmaceutical Research International*, December 14, 2021, 161–65. <https://doi.org/10.9734/jpri/2021/v33i57B34041>.

35. Dagadkar, Arundhatee. "Management and Outcomes of Pregnancy with Gestational Hypertension and Hyperthyroidism: A Case Report." *Journal of Pharmaceutical Research International*, July 28, 2021, 295–99. <https://doi.org/10.9734/jpri/2021/v33i38B32126>.
36. Dahake, Sampada, Priyanka Paul Madhu, Amit Reche, Kumar Gaurav Chhabra, Simran Kriplani, Rutuja Ubhale, and Barkha Adwani. "Determine the Effectiveness of Anacardic Acid and Stannous Fluoride as an Anti-Erosive Agent." *Journal of Pharmaceutical Research International*, October 16, 2021, 495–99. <https://doi.org/10.9734/jpri/2021/v33i46A32892>.