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Case Report

Intersecting Viral Burdens in Pediatrics: A Case Report of Dengue and Influenza A (H3N2) Co-Infection During Seasonal Transmission Peaks

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Abstract

Background: Viral co-infections in pediatric populations are uncommon but clinically significant, often presenting with overlapping symptoms that complicate diagnosis and management. In regions where multiple viral pathogens are endemic, such as South India, the simultaneous circulation of Dengue virus and Influenza A (H3N2) during seasonal peaks increases the likelihood of dual infections. Prompt recognition is essential to initiate appropriate therapy and prevent complications.

Case Presentation: We report a rare case of a 12-year-old girl who presented with a 4-day history of high-grade intermittent fever, bifrontal headache, retro-orbital pain, anorexia, malaise, and a 2-day history of dry cough with mucopurulent rhinorrhea clinically suggestive of an upper respiratory tract infection. On examination, she was febrile and tachycardic, with visibly swollen nasal turbinates and purulent nasal discharge. Laboratory investigations revealed mild thrombocytopenia and leukopenia. Molecular testing confirmed Influenza A (H3N2 RNA) via Reverse Transcriptase Polymerase Chain Reaction (RT-PCR), while serological analysis detected Dengue-specific IgM antibodies using Enzyme-Linked Immunosorbent Assay (ELISA), confirming co-infection.

The patient was managed conservatively with Oseltamivir, antipyretics, oral and intravenous fluids, and close clinical monitoring. No complications were observed, and she achieved full recovery by the sixth day of illness. She had normal platelet counts in outpatient Department after 48hours of admission.

Conclusion: This case underscores the importance of considering viral co-infections in pediatric patients presenting with febrile illness, particularly in endemic regions during overlapping outbreak seasons. Early diagnostic workup and supportive management are pivotal in ensuring favorable outcomes. Clinicians should maintain a high index of suspicion and utilize multiplex testing strategies to differentiate and identify concurrent infections.

Keywords: Influenza A H3N2, Dengue Fever, Co-infection.

Introduction

Influenza A (H3N2) and Dengue fever are two distinct viral illnesses that frequently cause seasonal epidemics in tropical and subtropical regions. Influenza A (H3N2), a subtype of the Orthomyxoviridae family, primarily affects the respiratory tract and is transmitted via aerosolized droplets. It typically presents with fever, sore throat, cough, myalgia, and malaise. In contrast, Dengue fever is a mosquito-borne viral infection caused by the Dengue virus, transmitted by *Aedes aegypti* mosquitoes. It is characterized by systemic symptoms such as high-grade fever, retro-orbital pain, myalgia, and hematologic abnormalities including thrombocytopenia and elevated hematocrit.

Although both viruses are endemic in many regions, co-infection is rarely reported, particularly in pediatric populations. The overlapping clinical features, fever, headache, myalgia can obscure diagnosis and delay targeted management. In recent years, the simultaneous circulation of respiratory and vector-borne viruses has increased the likelihood of dual infections, especially in densely populated areas with poor vector control and high seasonal transmission. Children, due to their immature immune responses and increased exposure in communal settings, are particularly susceptible.

This case report describes a rare pediatric co-infection of Influenza A (H3N2) and Dengue fever, highlighting the diagnostic challenges and emphasizing the importance of early recognition and supportive care.

Case Report

A 12-year-old girl was admitted with a 4-day history of high-grade intermittent fever (up to 39°C), bifrontal headache, retro-orbital pain, anorexia, and generalized malaise. She also developed dry cough and mucopurulent rhinorrhea over the preceding 2 days, suggestive of an upper respiratory tract infection. There was no history of rash, vomiting, bleeding, abdominal pain, recent travel, or known contact with sick individuals.

On Examination

- **General:** Febrile (39°C), lassitude, tachycardia (Pulse Rate (PR) 110 beats per minute (bpm), normotensive (Blood Pressure 100/70 mmHg), respiratory rate (RR) within normal limits, no respiratory distress. Anthropometry showed obesity (BMI>27th Adult Equivalent (AE).
- **ENT:** Swollen nasal turbinates with mucopurulent discharge.
- **Systemic:** Cardiovascular, respiratory, abdominal, and neurological examinations were unremarkable.

Investigations

Initial laboratory workup revealed:

- **Complete Blood Count:** Mild leukopenia (4,230 cells/mm³), thrombocytopenia (117,000 cells/mm³), Normal Hemoglobin, normal Hematocrit.
- **Liver Function Tests:** Mild transaminitis (Aspartate Transaminase (AST): 60 U/L Alanine Transaminase (ALT): 82 U/L).
- **Dengue Serology:** was sent on 4th day and turned out to be positive for IgM antibodies via ELISA on 6th of illness.
- **Respiratory Viral Panel:** RT-PCR detected Influenza A and H3N2 RNA.

No evidence of bacterial infection

Management

The patient was admitted for observation and supportive care. Treatment included:

- Hydration: Oral and intravenous fluids to maintain perfusion and prevent hemoconcentration.
- Antipyretics: Paracetamol for fever and discomfort.
- Antiviral Therapy: Oseltamivir 75 mg twice daily for 5 days.
- Monitoring: Daily platelet counts, hematocrit levels, and clinical signs of plasma leakage or bleeding.

The fever continued for another 2 days, and she recovered on its own.

No antibiotics were administered.

Outcome

The patient showed gradual clinical improvement:

- Fever subsided by Day 6 of illness.
- Upper respiratory symptoms resolved with supportive care.
- No signs of plasma leakage, bleeding, or respiratory distress were observed.
- Platelet count normalized on repeat testing after 48 hours (hrs.) of admission during follow up on 72 hrs. in outpatient Department (OPD), and liver enzymes normalized.

She was discharged in stable condition with complete recovery and advised for outpatient follow-up.

Discussion

Co-infection with Dengue virus and Influenza A (H3N2) is a rare but clinically significant occurrence, particularly in pediatric populations. While both viruses are endemic in tropical and subtropical regions, their simultaneous circulation during seasonal peaks increases the likelihood of dual infections [1-3]. The clinical overlap, fever, headache, malaise, and myalgia, can obscure diagnosis, delay appropriate therapy, and potentially lead to adverse outcomes if not promptly recognized [1,4-6].

The diagnostic challenge lies in the shared symptomatology. Dengue fever typically presents with high-grade fever, retro-orbital pain, thrombocytopenia, and systemic manifestations, whereas Influenza A (H3N2) is primarily a respiratory illness characterized by cough, sore throat, nasal congestion, and constitutional symptoms [2-4]. In this case, the patient exhibited features of both: upper respiratory tract involvement (dry cough, mucopurulent rhinorrhea) and classical dengue indicators (fever, headache, thrombocytopenia), necessitating a broad differential diagnosis.

Laboratory investigations were pivotal in confirming the dual etiology. RT-PCR identified Influenza A (H3N2) RNA, while ELISA detected Dengue-specific IgM antibodies. These findings guided the clinical approach and ruled out other potential causes of febrile illness. In resource-limited settings, where access to multiplex testing may be constrained, such cases risk being misdiagnosed or underreported [3].

The primary concern in co-infections is the potential for compounded complications:

- **Dengue Fever:** Particularly in its critical phase, may progress to plasma leakage, hemorrhage, or shock [6].
- **Influenza A:** Especially in children with underlying conditions, can lead to severe pneumonia, secondary bacterial infections, or exacerbation of asthma and other comorbidities [2].

Fortunately, in this case, the patient remained hemodynamically stable and did not exhibit signs of plasma leakage, respiratory distress, or bleeding. The decision to initiate Oseltamivir was based on early detection of Influenza A and the mild clinical course. Supportive care, including hydration, antipyretics, and close monitoring of hematologic parameters, proved sufficient for recovery.

Although most pediatric co-infections are self-limiting, the potential for synergistic viral interactions and immune dysregulation warrants careful observation. This case reinforces the importance of maintaining a high index of suspicion for co-infections during overlapping outbreak seasons and highlights the value of early diagnostic testing in guiding management [1-6].

Conclusion

This case underscores the importance of considering viral co-infections in pediatric patients presenting with febrile illness, particularly in endemic regions during overlapping outbreak seasons. Early diagnostic workup and supportive management are pivotal in ensuring favorable outcomes. Clinicians should maintain a high index of suspicion and utilize multiplex testing strategies to differentiate and identify concurrent infections.

Limitations

- **Dengue Serotyping:** Could have provided further insight into the clinical severity and epidemiological relevance of the infection.

References

1. Behera V, Naithani N, Nizami A, Ranjan R. A rare case of dengue and H1N1 coinfection: A deadly duo. *Lung India*. 2015; 32 (3):299–200. doi: 10.4103/0970-2113.156263.
2. Perez MA, Gordon A, Sánchez F, Narvaez F, Gutiérrez G, Ortega O, et al. Severe coinfections of dengue and pandemic influenza A H1N1 viruses. *Pediatr Infect Dis J*. 2010; 29:1052–1055. doi: 10.1097/INF.0b013e3181e6c69b.
3. Urmi TJ, Dewan SMR, Islam MR. Addressing the Dual Threat of Dengue and Influenza in Bangladesh: A Perspective on the Prevention and Preparedness Strategies. *Health Sci Rep*. 2025 Apr 10;8(4): e70656. doi: 10.1002/hsr2.70656.
4. Chacon R, Clara AW, Jara J, Armero J, Lozano C, El Omeiri N, Widdowson MA, Azziz-Baumgartner E. Influenza illness among case-patients hospitalized for suspected dengue, El Salvador, 2012. *PLoS One*. 2015;10(10): e0140890. doi: 10.1371/journal.pone.0140890.
5. Lopez Rodriguez E, Tomashek KM, Gregory CJ, Munoz J, Hunsperger E, Lorenzi OD, Gutierrez Irizarry J, Garcia-Gubern C. Co-infection with dengue virus and pandemic (H1N1) 2009 virus. *Emerg Infect Dis*. 2010;16(5):882-884. doi:10.3201/eid1605.091920.
6. P.D.N.N. Sirisena, Shakuntala Mahilkar, Chetan Sharma, Jaspreet Jain, Sujatha Sunil. Concurrent dengue infections: Epidemiology & clinical implications. *Indian J Med Res*. 2021;154(5):669-679. doi: 10.4103/ijmr.IJMR_1219_18.