



Clinical And Laboratory Profile of Influenza a And B In a Tertiary Care Centre

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ABSTRACT

Background: Influenza viral infections contribute significantly to pediatric morbidity. While Influenza A is frequently studied due to its pandemic potential, Influenza B also imposes a substantial burden.

Objective: To assess and compare the clinical and laboratory profiles of Influenza A and B in children admitted to a tertiary care centre.

Methods: A retrospective descriptive study was conducted on children aged <12 years admitted to the Department of Paediatrics, Travancore Medical College, from March 2024 to October 2024. Children with RT-PCR-confirmed Influenza A or B were included. Clinical symptoms, laboratory parameters, and outcomes were analyzed.

Results: Out of 145 confirmed cases, 108 (74.5%) were Influenza A and 37 (25.5%) were Influenza B. The mean age was 5.2 ± 3.1 years. Fever was the universal symptom (100%). Cough was significantly more frequent in Influenza A (88% vs. 70%, $p=0.01$), while myalgia was more prominent in Influenza B (35% vs. 18%, $p=0.03$). Leukopenia was observed in 28% of cases. Complications such as pneumonia were higher in Influenza A (15.7%) compared to Influenza B (8.1%). All children survived; however, the median hospital stay was slightly longer for Influenza A (5 vs. 4 days).

Conclusion: Influenza A was the predominant strain during the study period and was associated with more respiratory complications. However, Influenza B presented with significant systemic symptoms, emphasizing the need for equal vigilance in diagnosis and management.

I. INTRODUCTION

In the pediatric population, infections caused by the influenza virus lead to a wide range of systemic complications and remain a major source of illness and death [1]. This acute respiratory condition occurs seasonally, with various viral strains emerging at different times. The clinical presentation is highly variable, spanning from simple fever to critical conditions like severe pneumonia and Acute Respiratory Distress Syndrome (ARDS) [2].

School-aged children and adolescents (5–17 years) are particularly vulnerable to infection and act as primary drivers of transmission within the community [3]. Historically, scientific attention has largely concentrated on Influenza A because of its capacity for major antigenic changes and resulting pandemics, prominently seen during the 2009 H1N1 outbreak. Nevertheless, emerging data indicate that Influenza B is responsible for a similarly heavy burden of disease [4, 5]. Splitting into the Yamagata and Victoria lineages around the 1940s, Influenza B infects only humans and is capable of inducing severe clinical manifestations, especially in children younger than five [6].

Furthermore, a notable rebound in flu cases was anticipated following the relaxation of COVID-19 pandemic protocols and the subsequent decline in population-level natural immunity [7]. Consequently, the primary objective of this research is to evaluate and contrast the clinical and hematological characteristics of children with RT-PCR-confirmed Influenza A and B who were hospitalized at a tertiary care facility in Kollam, Kerala.

II. AIM & OBJECTIVES

Aim: To assess the clinical and laboratory profile of children testing positive for Influenza A or B.

Primary Objectives:

- To assess the clinical profile of Influenza A and B.
- To assess the laboratory profile of Influenza A and B.

Secondary Objective: To analyze differences between the clinical and laboratory profiles of Influenza A and B.

III. MATERIAL AND METHODS

- Study Design:** Retrospective descriptive study.
- Study Setting:** Department of Paediatrics, Travancore Medical College, Kollam.



- **Study Period:** March 2024 to October 2024 (8 months).
- **Study Sample:** Children aged <12 years admitted to the Paediatric Department who tested positive for Influenza A or B via RT-PCR.
- **Inclusion Criteria:** Children <12 years with informed consent and confirmed RT-PCR positive status.
- **Exclusion Criteria:** Patients with tracheostomy, severe chronic neurological conditions, congenital malformations, or sedative use in the week prior to admission.
- **Data Collection:** Data were retrieved from hospital records using a detailed proforma. Clinical parameters included fever, cough, breathlessness, and gastrointestinal symptoms. Laboratory parameters included Complete Blood Count (CBC), C-reactive protein (CRP), and chest X-rays. Fever was defined as a temperature $\geq 38^{\circ}\text{C}$ (100°F).

Pneumonia was defined as radiological opacity accompanied by elevated inflammatory markers.

- **Statistical Analysis:** Data were entered into Microsoft Excel and analyzed using SPSS version 16. Descriptive statistics (frequency, percentage, mean, SD) were calculated. Student's t-test and Chi-square tests were used for significance, with a *p*-value of ≤ 0.05 considered statistically significant.

IV. RESULTS

During the study period of March 2024 to October 2024, a total of 145 children with RT-PCR-confirmed influenza were included in the study.

1. Demographic Profile

Influenza A was the predominant etiology, detected in 108 (74.5%) patients, while Influenza B was found in 37 (25.5%) patients.

Table 1: Demographic Characteristics

Parameter	Influenza A (n=108)	Influenza B (n=37)	P-value
Mean Age (Years)	4.8 \pm 2.9	6.1 \pm 3.2	0.04*
Gender (Male/Female)	60 / 48	18 / 19	0.45
< 5 Years n (%)	62 (57.4%)	14 (37.8%)	0.03*
5-12 Years n (%)	46 (42.6%)	23 (62.2%)	-

Interpretation: Influenza B affected significantly older children compared to Influenza A.

2. Clinical Profile

Fever was present in 100% of cases. Respiratory symptoms were more pronounced in Influenza A, while systemic/GI symptoms were notable in Influenza B.

Table 2: Comparison of Clinical Symptoms

Symptom	Influenza A (n=108)	Influenza B (n=37)	P-value
Fever	108 (100%)	37 (100%)	1.00
Cough	95 (88.0%)	26 (70.3%)	0.01*
Rhinorrhea	88 (81.5%)	28 (75.7%)	0.44
Breathlessness	24 (22.2%)	5 (13.5%)	0.25
Myalgia	19 (17.6%)	13 (35.1%)	0.03*



Vomiting/Diarrhea	15 (13.9%)	9 (24.3%)	0.14
Seizures	4 (3.7%)	2 (5.4%)	0.65

3. Laboratory Profile

Hematological parameters showed similar trends in both groups, with leukopenia being a common finding.

Table 3: Laboratory Investigations (Mean ± SD)

Parameter	Influenza A	Influenza B	P-value
Hemoglobin (g/dL)	11.2 ± 1.4	11.5 ± 1.2	0.28
Total Leukocyte Count (/mm ³)	6,400 ± 2,100	5,900 ± 1,800	0.19
Platelet Count (Lakh/mm ³)	2.1 ± 0.8	2.3 ± 0.6	0.15
CRP Positive (>6 mg/L)	45 (41.6%)	12 (32.4%)	0.31

Note: Mild thrombocytopenia (<1.5 lakh/mm³) was observed in 12% of Influenza A cases and 8% of Influenza B cases.

4. Complications and Outcome

All children survived. However, the severity of respiratory involvement was higher in the Influenza A group.

Table 4: Complications and Hospital Course

Outcome	Influenza A (n=108)	Influenza B (n=37)
Pneumonia (CXR confirmed)	17 (15.7%)	3 (8.1%)
Need for O ₂ Support	14 (13.0%)	3 (8.1%)
PICU Admission	8 (7.4%)	2 (5.4%)
Mean Hospital Stay (Days)	5.2 days	4.1 days

V. DISCUSSION

This retrospective investigation details the clinical characteristics of 145 pediatric patients admitted to a tertiary care hospital in Kerala with laboratory-confirmed influenza. Our analysis revealed a clear preponderance of Influenza A, which accounted for 74.5% of cases, compared to 25.5% for Influenza B. These proportions closely mirror recent national data reported by Velamuri et al. (2025), who documented an approximately 75% prevalence rate for Influenza A in similar tertiary healthcare environments [8].

Demographic Variations

Our cohort demonstrated a significant age discrepancy between the two viral strains, with Influenza B predominantly infecting older children

(average age of 6.1 years) compared to the younger demographic affected by Influenza A (average age of 4.8 years). This age distribution aligns with the observations of Daley et al. and Bhat et al., both of whom highlighted that Influenza A is the primary driver of hospital admissions among toddlers, whereas Influenza B is more frequently diagnosed in school-aged demographics [5, 9].

Clinical Presentation

All patients in the study presented with fever; however, other symptoms varied notably between the two groups. Coughing was recorded much more frequently in the Influenza A cohort (88%), highlighting the virus's strong affinity for the lower respiratory tract. Conversely, patients with Influenza B reported a significantly higher incidence of myalgia (35.1% versus 17.6%). This finding



strongly correlates with the traditional clinical profile of Influenza B, which is known to frequently induce prominent muscle aches and myositis, as corroborated by Bhat YR [5]. While Influenza B is sometimes perceived as a milder illness, our findings contradict this assumption; 8.1% of children with Influenza B required supplemental oxygen, underscoring its potential for severity.

Laboratory Insights

Consistent with typical viral infections, leukopenia was frequently observed across the study population. A smaller percentage of patients exhibited thrombocytopenia.

In the context of Kerala, where Dengue fever is highly prevalent, this is a critical observation. As emphasized by Lalitha et al., it is clinically imperative to differentiate between a drop in platelets caused by influenza and that caused by Dengue to guide appropriate patient management [11].

Seasonal Patterns

The timeframe of our data collection spanning March to October overlaps with Kerala's pre-monsoon and monsoon periods. The continuous presentation of influenza cases throughout these wetter months is in accordance with the guidelines published by the Directorate of Health Services, Kerala. These guidelines note that unlike Western countries, which experience winter flu peaks, tropical environments such as Kerala frequently endure surges in influenza activity coinciding with the rainy season [10].

VI. CONCLUSION

Within our clinical setting, Influenza A continues to be the primary etiology for pediatric flu-related hospitalizations, and it correlates heavily with an increased rate of lower respiratory tract issues, including pneumonia. Nonetheless, Influenza B remains a substantial cause of illness, especially among school-going children, and is frequently characterized by pronounced systemic features such as myalgia. To minimize the risk of severe complications, both viral lineages demand prompt clinical suspicion and proactive medical management.

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