Complications of Influenza: A Descriptive Study of Hospitalized Patients at the Service of Infectious Diseases, UHC Tirana (2024–2025)

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ABSTRACT

Background: Influenza A is a seasonal viral infection that continues to pose a significant public health burden globally.

Objective: This study aimed to investigate the complications associated with laboratory-confirmed Influenza A in hospitalized patients at the Service of Infectious Diseases, University Hospital Center (UHC), Tirana, from December 2024 to February 2025.

Methods: We retrospectively analyzed medical records of 32 patients aged 14 years or older with serologically confirmed Influenza A. Demographic data, underlying conditions, clinical complications, and laboratory biomarkers (PCR, neutrophils, monocytes, hepatic and renal markers) were collected.

Results: Among the 32 confirmed cases, 15 patients (46.9%) developed complications. Pneumonia was the most frequent complication (9 cases), followed by bronchopneumonia (2), acute bronchitis (2), encephalitis (2), tonsillitis (1), and sepsis (1). The majority of complicated cases were elderly (>60 years) and/or had comorbidities such as hypertension, diabetes, or chronic pulmonary or renal disease. PCR, and neutrophil counts demonstrated high diagnostic specificity.

Conclusion: Influenza A can result in severe complications, particularly in elderly and comorbid patients. Early recognition, biomarker-guided diagnosis, and targeted interventions are essential to reduce morbidity and mortality.

Keywords: Influenza A, complications, pneumonia, encephalitis, biomarkers, elderly

INTRODUCTION

There are three types of influenza virus that infect humans –A, B and C. Influenza A is a highly contagious respiratory illness responsible for annual epidemics that cause significant healthcare challenges. Influenza evades the immune system by changing its antigenic properties. It is typically characterized by an abrupt onset of fever, fatigue, myalgia, and respiratory symptoms. In healthy individuals, it generally resolves without serious outcomes. However, in vulnerable populations, complications can lead to hospitalization and even death (1).

Despite its prevalence, influenza is often underdiagnosed in hospitalized settings, particularly when complications such as pneumonia are misattributed to primary bacterial causes (1–3). Consequently, influenza-related morbidity and mortality are often underestimated. The aim of this study is to assess the type and frequency of complications among hospitalized patients with confirmed Influenza A and to correlate these outcomes with patient demographics, comorbidities, and laboratory markers (3,4). The disease is frequently

mild but can be severe and is a significant cause of mortality in vulnerable individuals, including young children, pregnant women and elderly or immunocompromised individuals (1,4).

METHODS

This retrospective descriptive study was conducted at the Service of Infectious Diseases, UHC Tirana. We included patients ≥14 years of age admitted between December 2024 and February 2025 with serologically confirmed Influenza A. Demographic characteristics, comorbid conditions, clinical complications, and laboratory markers were extracted from patient records.

We focused on biomarkers such as PCR (C-reactive protein), neutrophils, monocytes, liver enzymes, and renal function markers. These parameters were analysed for their diagnostic relevance and correlation with disease severity.

RESULTS

A total of 32 patients were confirmed with Influenza A infection. Most cases (19) were diagnosed in January, aligning with the seasonal peak. Of these, 15 patients (46.9%) developed one or more complications. The age range of complicated cases was 18 to 91 years, with 10 males and 5 females. The most affected age group was >60 years (7/15 complicated cases).

Table 1. Monthly Distribution and Outcomes

Month	**Confirmed Cases**	**Complicated Cases**	**With Comorbidities**	**Deaths**
December	2	0	1	0
January	19	9	3	3
February	11	6	2	1
Total	**32**	**15**	**6**	**4**

Identified Complications:

- Pneumonia: 9 cases
- Bronchopneumonia: 2 cases
- Acute bronchitis: 2 cases
- Encephalitis: 2 cases
- Tonsillitis: 1 case
- Sepsis: 1 case

Among patients with complications, comorbidities were frequent. Hypertension (HTA) and diabetes mellitus (DM) were the most common in 5 and 5 patients respectivly, followed by chronic obstructive pulmonary disease (COPD), chronic renal failure (CRF), cardiac disease, and pregnancy (2 cases).

Table 2. Diagnostic Biomarkers in Complicated Cases

Biomarker	Specificity (%)
PCR	95
Neutrophils	85
Monocytes	80
Hepatic Parameters	35
Renal Parameters	20

PCR level was elevated in nearly all complicated cases, demonstrating their utility in diagnosis. Liver and kidney function abnormalities were present in 35% and 20% of complicated cases, respectively.

DISCUSSION

Our findings reinforce existing literature that pneumonia is the most prevalent and severe complication of Influenza A. These complications predominantly occurred in elderly patients with underlying comorbidities, highlighting a vulnerable population requiring heightened surveillance. All pneumonia cases presented with classic influenza symptoms and were accompanied by radiologic signs mimicking pulmonary congestion (5). Encephalitis, although rare, was present in two patients and manifested as acute changes in consciousness. This aligns with descriptions of influenza-associated encephalopathy, a serious but often underrecognized complication. In such cases, rapid neurological deterioration may precede or outlast respiratory symptoms (6–8). Renal and hepatic involvement, though infrequent, may serve as markers of systemic severity. Renal injury mechanisms include hypovolemia, sepsis-induced ischemia, or direct viral cytopathic effects (9,10). Hepatic dysfunction, as reflected in altered liver enzymes, correlated with extended hospitalization and hypoxia (10,11).

The use of biomarkers like PCR, and neutrophil count proved effective in supporting diagnosis and stratifying disease severity. The initial levels of CRP in influenza suggest that they significantly increase in patients who develop severe complications. Neutrophils are among the first innate cells recruited to sites of infection and they possess a repertoire of essential effector mechanisms that help control the spread of pathogens, including viruses (12–17). The notable mortality rate (12.5%) underlines the need for improved preventive strategies, including targeted vaccination and early intervention protocols

Given the global health impact of seasonal influenza, these findings stress the importance of active surveillance, rapid diagnostics, and robust public health responses, particularly in resource-limited settings.

CONCLUSION

Influenza A remains a significant contributor to seasonal morbidity and mortality. Complications such as pneumonia, encephalitis, and sepsis are particularly common in the elderly and those with comorbid conditions. The integration of high-specificity biomarkers like PCR and neutrophils into diagnostic pathways can improve early recognition and management. Proactive measures, including vaccination and enhanced monitoring of high-risk groups, are essential to reduce complications and mortality.

RECOMMENDATIONS

- Prioritize annual influenza vaccination for the elderly, pregnant women, and individuals with chronic illnesses.
- Employ PCR and neutrophil counts as part of early diagnostic protocols.
- Implement continuous monitoring for complications in high-risk populations.
- Promote awareness of less common but severe complications such as encephalitis and sepsis among healthcare providers.

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