

H1N1 (Swine-Flu) Induced Pneumonia and Respiratory Failure Leading to Death in a Patient with Acute Myeloblastic Leukaemia: Case Report

Abdulkerim Yıldız^{1*}, Murat Albayrak¹, Harika Okutan¹, Fatma Aybala Altay², Çiğdem Pala Öztürk¹ and Okan Yayar¹

¹Department of Hematology, Sağlık Bilimleri Üniversitesi (University of Health Sciences) Diskapi Yıldırım Beyazıt Training and Research Hospital, Ankara, Turkey

²Department of Clinical microbiology and infectious diseases, Sağlık Bilimleri Üniversitesi (University of Health Sciences) Diskapi Yıldırım Beyazıt Training and Research Hospital, Ankara, Turkey

***For Correspondence:** Yıldız A, Sağlık Bilimleri Üniversitesi (University of Health Sciences) Diskapi Yıldırım Beyazıt Training and Research Hospital, Department of Hematology, Ankara, Turkey, Tel: +90 5327280414; Fax: +90 312 2562340; E-mail: akerim@hotmail.com

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Case Report

ABSTRACT

H1N1 is an influenza A virus which is a member of the orthomyxoviridae family. Severe influenza A virus (H1N1) infection is associated with risk factors such as pregnancy, immunosuppression and obesity. Acute Myeloblastic Leukaemia (AML) is the most common acute leukaemia in adults. Immunosuppressed patients, such as those with AML, are more susceptible to infection with influenza and infection-associated complications. The case is here presented of a patient with AML where pneumonia and acute respiratory distress syndrome (ARDS) due to H1N1 infection during chemotherapy led to death on the 3rd day of treatment.

Keywords: H1N1 virus, Influenza, Acute myeloblastic leukaemia

INTRODUCTION

H1N1 influenza A virus is a member of the orthomyxoviridae family. Infection with H1N1 influenza is also known as swine flu. The first case in Turkey was reported in 2009. H1N1-related deaths are usually due to respiratory and multiorgan failure. In immunocompromised patients, the risk of death due to H1N1 infection is increased [1].

Acute myeloid leukemia (AML) accounts for 80 of adult acute leukaemias. The average age at diagnosis is 65 years and the incident increases with age. The most common cause of death in AML is bleeding and infections. The H1N1 virus is a member of the influenza A group. Mortality due to infection with Influenza A (H1N1) has been observed more frequently, especially in immunocompromised cases such as patients with underlying chronic diseases. Influenza A (H1N1) can also lead to more serious and prolonged infections in immunosuppressed patients such as those with AML [1,2].

CASE REPORT

A 58 year old male patient was diagnosed with AML as a result of flow cytometric analysis of bone marrow (BM), BM aspiration and BM biopsy. There was dysplasia in the BM examination so the patient was considered as AML secondary to myelodysplastic syndrome. The patient was admitted to another center for social reasons. It was later learned that three courses of azacitidine treatment (Azacitidine 75 mg/m²/day-28 days for 7 days) were given because of comorbidities and poor performance score. When the patient was admitted to our centre he had still blast cells in the peripheral blood (PB) smear. Subcutaneous cytarabine was started at the dosage of 2 x 20 mg (10 days per month) as the patient had not achieved remission with the previous regimen. Complaints of fever, shortness of breath and cough

developed during the follow-up of the patient. While the direct chest X-ray was normal one week previously (**Figure 1A**), there were newly developed pneumonia findings on the high resolution computed tomography (HRCT) of the lungs now (**Figure 1B**). On the recommendation of the Infectious Diseases Department, antibiotic treatment was started as meropenem 3 x 1 g and teicoplanin 1 x 400 mg. On the third day of treatment, liposomal amphotericin B was added due to persistent fever. A throat swab culture was obtained and then Oseltamivir at the dosage of 2 x 75 mg was initiated due to suspicion of influenza pneumonia especially H1N1. In the meantime, all the blood and urine cultures of the patient were obtained. The Influenza A [FluA (H1N1) sw1] result which was detected by real time PCR was positive. The patient was considered to have pneumonia due to H1N1 influenza (swine flu) infection. The patient's condition progressively deteriorated and ARDS developed leading to death on the 3rd day of admission.

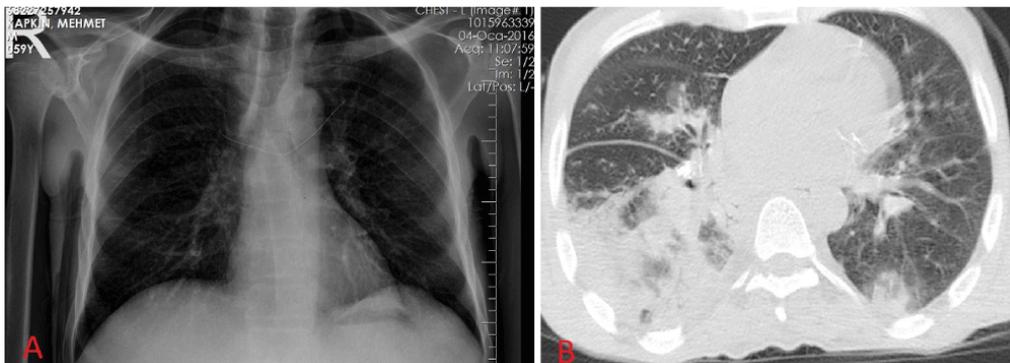


Figure 1. Normal chest X-ray imaging one week before infection and HRCT imaging bilateral pneumonic infiltration involved especially right lobe.

DISCUSSION

Although H1N1 infection usually presents with mild flu-like symptoms, it may show a more fatal course especially in patients with underlying malignant BM diseases. In Turkey, during the pandemic influenza that started in 2009, H1N1 influenza A virus incidents were also reported and new cases continue to be detected. Deaths related to H1N1 infections are usually due to respiratory insufficiency or multiorgan failure. H1N1 infection seriously increases mortality in immunocompromised cases such as those with AML [2]. Oseltamivir treatment was started in the current case before throat swab culture results were obtained. However, there was no response to the treatment and the patient died of respiratory failure.

In pandemic H1N1 influenza infections, there is a greater risk of lower respiratory tract complications, sepsis and organ failure than in seasonal influenza infections. Intensive care support, mechanical ventilation and death are more frequent especially in immunosuppressed patients with H1N1 infection [3].

During the influenza A (H1N1) pandemic, seen between 2009 and 2010, multiorgan failure, ARDS, respiratory insufficiency and rapidly progressive pneumonia cases were observed. In some cases, deep hypoxemia and respiratory failure resistant to mechanical ventilation were seen [4]. Complications related to influenza infection may be more severe and lethal in patients with underlying chronic pulmonary diseases, diabetes mellitus, immunosuppressive conditions, cardiac diseases and obesity [5].

In some cases, oseltamivir may not be effective and oseltamivir resistance should be considered in such cases. The presence of H275Y neuraminidase mutation may lead to the development of oseltamivir resistance. This should be kept in mind when the patient is not responsive to treatment. Intravenous zanamivir therapy may be administered in these cases instead of oseltamivir [6,7].

The development of invasive aspergillus infection has been previously reported in immunocompromised patients with pandemic influenza A (H1N1) diagnosis. In another study, it was emphasized that influenza (H1N1) infection may increase invasive aspergillus risk in neutropenic patients [8,9].

Seasonal influenza vaccination in allogeneic bone marrow transplant recipients and patients with hematological malignancy is protective and may reduce mortality due to this infection [10].

CONCLUSION

In hematological malignancy cases such as AML, the immune system is compromised. Therefore, the risk of infections such as influenza and complications associated with these infections are increased in these cases. This case was presented to draw attention to influenza A (H1N1) infection which may lead to mortality in this patient group.

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