

Sarah with acute
lymphoblastic
leukemia (all) are



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Sarah Elnassir Elnigoumi, Haya Mohammed AlKhayyat INTRODUCTION Swine-origin influenza A (H1N1) was officially announced as a pandemic universally in June 2009 (1). Although it can lead to mild clinical illness, some patients diagnosed with H1N1 suffer from less than mild symptoms and more complications (2).

These risks include more systemic complications like pneumonia and bacterial co-infection. (3). Swine flu should be closely monitored in the pediatric population, because the risk factors and complications may be extremely severe in this specified population.

Also, the disease can easily evolve and be catalyzed to reach dangerous levels. Some of these severe conditions include chronic lung disease and neurological conditions. Furthermore, children with acute lymphoblastic leukemia (ALL) are at a higher risk of complications when exposed to H1N1 swine flu as a result of their low immunity (4). We present a case of a patient who presented with H1N1 pneumonia associated with pancytopenia.

CASE PRESENTATION This is a three-year-old Bahraini boy, who is a known case of Alpha Thalassemia trait. He presented to the Emergency Department with history of fever, cough and poor appetite of one week duration. Medical advice was sought at a private hospital prior to his admission, where he was then transferred to our hospital by ambulance as a case of H1N1 Pneumonia with anemia and thrombocytopenia. He is a product of full term, normal delivery with a normal birth weight and had no perinatal complications. His immunization status is up to date and he was developmentally normal. The boy's medical history is only significant for

AlphaThalassemia trait. There was neither a history of previous hospital admissions nor surgical procedures.

Family history was significant for both sickle cell disease and thalassemia as the father has both conditions. On admission, he was in respiratory distress with mild pallor and high grade fever (40 degrees Celsius). His Oxygen saturation was maintained above 95% in 2 Liters of Oxygen. Chest auscultation revealed reduced air entry over the right lung with bilateral crepitations.

Physical examination was negative for lymphadenopathy or hepatosplenomegaly. A complete blood count on admission, showed normal leukocyte count ($8.3 \times 10^9/L$) with microcytic, hypochromic anemia (8.5 g/dl) and thrombocytopenia ($15 \times 10^9/L$).

The blood film revealed atypical lymphocytes with no blast cells. In view of his respiratory symptoms, a chest x-ray was done which showed infiltrations of the right upper lobe. The patient was admitted and kept under cardiac monitor. He was started on Tamiflu, Erythromycin, Vancomycin, Rocephin, Methylprednisolone and bronchodilators.

Also, he received multiple platelet transfusions. He continued to have fever and a complete blood count was repeated which showed leukopenia ($2.83 \times 10^9/L$) with an absolute neutrophil count of 0, hemoglobin of 7.1g/dl and a platelet count of $8 \times 10^9/L$. Repeated blood film was also negative for blast cells.

His blood culture result was sterile. His antibiotics were changed to Tazocin and Gentamycin and a Hematologist advice was sought for bone marrow examination to rule out malignancy and was started on IVIG. Later on, blood film was repeated and showed blast cells. This was followed by Bone Marrow examination which confirmed the diagnosis of Acute

Lymphoblastic Leukemia. **DISCUSSION** Since the WHO declaration of pandemic of influenza H1N1 in 2009, the new strain of the virus attracted the interest of scientists to work on the prevention and the management of the infection mechanism in immunocompromised cases. Influenza disease has been a serious health problem in patients with hematological malignancies undergoing systematic chemotherapy, or hematopoietic stem cell transplant, even before the emergence of the novel 2009 H1N1 influenza strain.

A few studies have revealed seasonal influenza outbreaks among these patients and depicted the susceptibility of immunocompromised populations. However, limited number of studies report that there is a possible association between cancers and acquisition of influenza in the community and health care facilities, and consequently influenza can cause critical health problems to cancer patients (5-8). A study done in Turkey 2010, which included 31 children who presented with flu symptoms in 2009; and were confirmed to have pandemic influenza H1N1 influenza by two-step polymerase chain reaction from nasopharyngeal specimens.

Complete blood count and peripheral smear out of which 4 had bone marrow aspiration for intractable fever accompanying cytopenia(s), which were later examined by hematologist. These patients were then evaluated for elevated hemophagytic lymphohistocytosis. Fisher's exact test was used to analyze

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the association between the presence of an underlying chronic disorder and hospital admission with the development of cytopenia(9-10). The Turkish study also revealed that four patients with persistent fever and cytopenia (s) had bone marrow aspiration examination. of these, 1 had a new diagnosis of acute myeloid leukemia (patient with down syndrome) and 1 ALL and 1 acute myeloid leukemia (AML) patient had no hemophagocytosis and were in remission(11)A study published in Riyadh in 2013, on 80 children during period of October 2010–April 2011 included a one-year-old female patient with leukemia without any history of influenza vaccination coverage who presented with typical influenza-like disease symptoms including fever > 39°C, myalgia, pharyngitis, and cough, with no recent travel abroad during the winter.

The authors concluded that influenza virus's infection in leukemia patient was associated with mild symptoms like those of seasonal influenza-like illness including fever, cough, and sore throat and due to the child's age and immunocompromised state one-year-old leukemia in fact, role in the establishment of co-infection in patients was not linked with the severity of the symptoms(12). Conclusion Most studies, including this report have shown an association between severely immunosuppressed patients and developing influenza associated pneumonia. Unfortunately, due to these children's immunosuppression, vaccines such as the seasonal influenza vaccine may be of very little benefit. The major aim of this report was to identify the association between the child's immunocompromised state and pancytopenia with the incidence of developing viral pneumonia.

Data on association of leukemia with H1N1 and other viral pneumonias is limited and further studies in association with oncologist and hematologist are required.