

H1N1 INFLUENZA VERSUS SEASONAL INFLUENZA MORBIDITY AND MORTALITY : A PROSPECTIVE STUDY IN AL-KINDY TEACHING HOSPITAL/ IRAQ-BAGHDAD

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ABSTRACT

Background: H1N1 influenza pandemic or swine flu was an influenza pandemic first described in Iraq in October 2009. The virus appeared to be a new strain of H1N1 causes wide range of morbidity and mortality among different genders and age groups as part of worldwide pandemics. Seasonal flu is a contagious respiratory illness caused by influenza viruses that infect the nose, throat, and lungs. It can cause mild to severe illness, and at times can lead to death. The best way to prevent the flu is by getting a flu vaccine each year.

Objectives: Is to determine the morbidity and mortality in different age groups in patients with H1N1 influenza versus those patients with seasonal influenza who were admitted at the same time to AL-kindly teaching hospital during pandemic 2009.

Type of the study: A retrospective observational study.

Methods: A total number of 210 cases with influenza symptoms and signs were included in this study which was conducted at AL-kindly teaching hospital, Baghdad, Iraq at inpatient medical wards over a period from October to December 2009. All cases were tested by real time PCR for H1N1 influenza virus by taking nasal and throat swab in addition to monitoring symptoms and signs of influenza and chest radiographs.

Results: Out of 210 cases, 90 (42.85%) cases were positive for H1N1 influenza and 120 (57.14%) cases had negative test are considered having seasonal influenza. Of the positive cases (64.44%) were males and (35.55%) were females. Of negative cases (seasonal flu) male

gender were (61.66%), while female gender were (38.33%). 57.77% of positive cases developed flu like illness compared with 54.16% of negative while 25.55% of positive developed pneumonia compared with 22.5% of negative. 5.55% of positive cases developed ARDS compared with 5% only in negative cases. 11.11% had different presentation in positive cases (bronchitis, gastroenteritis) while 18.33% of negative. Mortality in positive cases are 14.4% compared with only 10% in negative cases.

Conclusions: Influenza A/H1N1 had same symptoms and signs of epidemic seasonal influenza but run aggressive and short course of morbidity in 3-5 days with high percentage of complication and high mortality compared with seasonal epidemic influenza with rare affection above 65 years old, both groups had same incidence of complication with pneumonia and ARDS.

Keywords: H1N1, AL-Kindy, Mortality

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The 2009 flu pandemic or swine flu was an influenza pandemic, and the second of the two pandemics involving H1N1 influenza virus (the first of them was the 1918 flu pandemic), albeit in a new version. First described in April 2009, the virus appeared to be a new strain of H1N1 which resulted when a previous triple reassortment of bird, swine and human flu viruses further combined with a Eurasian pig flu virus,[2] leading to the term "swine flu" to be used for this pandemic. Unlike most strains of influenza, H1N1 does not disproportionately infect adults older than 60 years; this was an unusual and characteristic feature of the H1N1 pandemic.[3] Even in the case of previously very

healthy persons, a small percentage will develop pneumonia or acute respiratory distress syndrome (ARDS). This manifests itself as increased breathing difficulty and typically occurs 3-6 days after initial onset of flu symptoms.[4] The pneumonia caused by flu can be either direct viral pneumonia or a secondary bacterial pneumonia. Similar to other influenza viruses, it is typically contracted by person to person transmission through respiratory droplets.[5] Symptoms usually last 4-6 days.[6] Antivirals (oseltamivir or zanamivir) were recommended for those with more severe symptoms or those in an at-risk group.[7].

The symptoms of H1N1 flu are similar to those of other influenzas, and may include fever, cough (typically a "dry cough"), headache, muscle or joint pain, sore throat, chills, fatigue, and runny nose. Diarrhea, vomiting, and neurological problems have also been reported in some cases.[8] People at higher risk of serious complications include those aged over 65, children younger than 5, children with neurodevelopmental conditions, pregnant women (especially during the third trimester),[8] and those of any age with underlying medical conditions, such as asthma, diabetes, obesity, heart disease, or a weakened immune system (e.g., taking immunosuppressive medications or infected with HIV).[9] Symptoms in severe cases include; Difficulty breathing or shortness of breath or pressure in the chest or abdomen. Sudden dizziness, confusion, severe or persistent vomiting and low temperature. Aim of the study: is to study the distribution of cases among various age groups and gender distribution and the clinical presentation and complications and the mortality and the severity of various cases.

Methods: A retrospective observational study of 210 patients with flu illness were admitted to AL-kindy teaching hospital ,Baghdad ,Iraq inpatient medical wards over a period of October to December 2009. All patients subjected to full clinical examination and chest radiographs to detect early respiratory complications with careful registration of morbidity and mortality in different genders and age groups. diagnosis of pandemic H1N1 flu was confirmed by testing of nasopharyngeal, nasal or oropharyngeal tissue swab from all the patients.[9] Virological recognition by Real-time RT-PCR test was accomplished in Baghdad central lab by using promega.... Master mix Go Taq PCR kit as it was recommended to differentiate between pandemic H1N1 and regular seasonal flu.[10] However, most people with flu symptoms do not need a test for pandemic H1N1 flu specifically, because the test results usually do not affect the recommended course of treatment[11]. Statistical analysis of results was done using percentage method and the agreement of the scientific and ethical committee was obtained.

Results: 210 patients were included in this study, 90 cases were positive by real time PCR for influenza A/H1N1 (42.85%) and 120 were negative (57.14%). Most cases are male gender in both groups of patients (64.44%, 61.66% respectively). Most of cases falls between 13 and 45 years age (71.1% in positive and 75% in negative groups). Only one case above 65 years was positive (1.11%) compared with five cases in negative groups (4.16%). The complications (pneumonia, ARDS) were higher in positive group and show rapid course of deterioration compared to negatives. Mortality in positive cases was 14.4% mostly in young age groups 53.85%, with no death above 65

years while mortality in negative cases was 10%, distributed equally in young and old age groups 41.66%.

Discussion: The symptoms of H1N1 flu are similar to those of other influenzas. The clinical picture in severe cases is strikingly different from the disease pattern seen during epidemics of influenza. While people with certain underlying medical conditions are known to be at increased risk, many severe cases occur in previously healthy people. In severe cases, patients generally begin to deteriorate around three to five days after symptom onset. Deterioration is rapid, with many patients progressing to respiratory failure within 24 hours, requiring immediate admission to an intensive care unit. Upon admission, most patients need immediate respiratory support with mechanical ventilation.[12]. The virus fluA/H1N1 is currently less lethal than previous pandemic strains and kills about 0.01-0.03% of those infected; the 1918 influenza was about one hundred times more lethal and had a case fatality rate of 2-3%.[13]. Most complications have occurred among previously healthy individuals, with obesity and respiratory disease as the strongest risk factors. Pulmonary complications are common. Primary influenza pneumonia occurs most commonly in adults and may progress rapidly to acute lung injury requiring mechanical ventilation. Secondary bacterial infection is more common in children. *Staphylococcus aureus*, including methicillin-resistant strains, is an important cause of secondary bacterial pneumonia with a high mortality rate. Neuromuscular and cardiac complications are unusual but may occur.

A study at the U.S. Centers for Disease Control and Prevention published in May 2009 found that children had no preexisting immunity to the new strain but that adults, particularly those older than 60, had some degree of immunity (this explains that only one case above 65 years in this study). Children showed no cross-reactive antibody reaction to the new strain, adults aged 18 to 60 had 6-9%, and older adults 33%.[13][14] While it has been thought that these findings suggest the partial immunity in older adults may be due to previous exposure to similar seasonal influenza viruses. The mortality is less than worldwide mortality because virus described late for season of influenza (winter and spring).

Conclusions: 1-most of the cases involved in this study are male gender 64.44% in positive cases and 61.66% in negative cases (more in positive cases). 2-most cases age fall in between (31-45) years which is 41.1% in positive cases compared with 41.66% in negative cases (nearly equal). 3-cases above 65 years old only 1.1% in positive cases while 4.16% in negative cases. 4-mortality in positive cases 14.4% while in negative cases only 10%. 5-the disease features and complications is more severe and run rapidly in positive cases.

Table 1 distribution of cases according to presence of H1N1			
Positive real time PCR		Negative real time PCR	
90 cases	42.85%	120 cases	57.15%

Table 2 Gender distribution			
Positive cases		Negative cases	
M	F	M	F
58	(64.44%)	32	(35.55%)
74	(61.66%)	46	(38.33%)

Table 3 Age distribution					
Age	13-30	31-45	46-64	>65	total
Positive	27(30%)	37(41.1%)	25(27.77%)	1(1.11%)	90(42.85%)
Negative	40(33.33%)	50(41.56%)	23(20.83%)	5(4.16%)	120(57.14%)

Table 4 clinical presentation and complications				
Clinical diagnosis	Flu	Pneumonia	ARDS	Others
Positive	52(57.77%)	23(25.55%)	5(5.55%)	10(11.11%)
Negative	65(54.16%)	27(22.5%)	6(5%)	22(18.33%)

Table 5 Mortality		Total cases
Positive	13(14.4%)	90
Negative	12(10%)	120

Table 6 Mortality distribution according to age			
Age	13-40	41-64	>65
positive	7(53.85%)	6(46.15%)	0
nagative	5(41.66%)	2(16.66%)	5(41.66%)

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