

Seasonal Influenza A (H1N1) 2017-18, experience of dealing with a deadly disease

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AM MAUM conceived idea, AM MAUM drafted the study, MAUM MIS collected data, AM MHK HGM did statistical analysis & interpretation of data, AM MAUM MU critical reviewed manuscript, All approved final version to be published.

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The Authors declares that there is no conflict of interest.

Abstract

Background: Influenza has caused multiple outbreaks throughout the world in 20th century but the emergence of influenza A H1N1 pandemic has resulted in increased mortality throughout the world. Although WHO has announced in 2010 that influenza pandemic was over but seasonal outbreaks are there annually. Pakistani population also suffer from this outbreak. In December 2017 and January 2018 largest number of cases have been reported in Nishtar Medical University Hospital Multan due to its large catchment area (Whole south Punjab, part of Sindh, Balochistan and KPK).

Methodology: We reviewed the record of all suspected H1N1 patients admitted in Isolation ward Nishtar hospital Multan, Pakistan from 1st December 2017 to 31st January 2018. we followed the WHO SOP for diagnosis and treatment of H1N1, detailed History of ILI (influenza like illness) and SARI (severe acute respiratory illness) and co morbidities like previous respiratory illness, Diabetes Mellitus, Chronic Renal Failure, pregnancy, Heart failure, malignancy or drugs like anti cancer chemotherapy, prolonged use of steroids was also taken in to account. X ray chest PA view, Nasopharyngeal swab of all suspected H1N1 cases were sent for PCR. Data included clinical details of patients as well as their respective areas.

Results: Total 277 suspected cases were admitted in isolation ward during these two months, 130 cases (46.93%) turned out to be positive by PCR. Age range was 3 to 90 years, male to female ratio was 1: 1.5. Mortality rate among these 130 cases was 32.3% (42 cases).

Conclusion: This is high number of cases admitted in isolation and ICU ward from different regions of Punjab in two months and 46.93% were detected as positive, among these positive cases mortality rate was also high i.e 32.3%. Immense preventive measures such as identification of risk factors, vaccination of high risk groups i.e extremes of ages, and co morbidities like diabetes, pregnancy and other conditions like, chronic lung diseases, immune compromised states due to any reason etc and awareness of general public about hand hygiene etc, should be taken in order to avoid or minimize such epidemics in future.

Key Words: H1N1 Pandemic; Isolation ward, Morbidity, Mortality, Prevention.

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Introduction

Influenza A H1N1 is a highly contagious acute respiratory disease of pigs, caused by one of the several strains of swine influenza A. The virus spread among pigs by aerosols, through direct and indirect contact, and also by asymptomatic carrier pigs.¹

Swine-origin influenza A (H1N1) virus in humans have been identified in swine in the United States in 1998.²⁻³ After multiple outbreaks throughout the 20th century, perhaps one of the most striking events occurred in 2009 when a novel H1N1 virus emerged, this resulted in the swine flu pandemic, that by June 2009 had

caused the World Health Organization (WHO) to raise its pandemic alert level to phase six.⁴ Pandemic Influenza A (swine flu), a pandemic of a variant H1N1 virus emerged by an antigenic mutation of H1N1 began in North America in April 2009 and spread over to a large part of the world from June onwards.⁵ It was

later estimated by the Centers for Disease Control and Prevention (CDC), that the global death toll from this pandemic was more than 284,000, which was around 15 times higher than the laboratory confirmed cases.⁶⁻⁷

Table 1: Total number of cases reported from different areas of Punjab

Total Suspected Cases	Lab Results	
277	Positive	Negative
	130	147

World Organization for Animal Health reports 8 that Swine Influenza strain has not been isolated in pigs.⁹ This strain can be transmitted from human to human¹⁰ and causes the normal symptoms of influenza.¹¹ Basically these viruses causing pig's flu are classified as influenza A, B, and C. Transmission mainly occurs between pigs and humans. The viruses are 80–120 nm in diameter.¹² Of the three genera of influenza viruses that cause human flu, two also cause influenza in pigs, with influenza virus A being common in pigs and influenza virus C being rare. Influenza virus B has

not been reported in pigs.¹³

One of the countries that are susceptible to influenza outbreaks is Pakistan. Multiple outbreaks in different parts of the country have been reported, notably in the provinces of Punjab and Sindh, with substantial deaths occurring due to the disease.¹⁴⁻¹⁶ On August 10th 2010, WHO declared the influenza pandemic over, saying that worldwide Flu activity has returned to typical seasonal pattern. Now seasonal outbreaks may happen every year which will now be known as seasonal influenza A. This Flu season 2017-18 has

Table 2: Total cases and result of PCR report as well as mortality

No.	District	Suspected	Lab. Results			Mortality
			Positive	Negative	Awaited	
1	Multan	148	68	80	0	20
2	D. G. Khan	11	4	7	0	0
3	Khanewal	34	19	15	0	10
4	MZG	47	21	26	0	5
5	Vehari	6	2	4	0	1
6	T. T. Singh	1	0	1	0	0
7	Lodhran	4	3	1	0	0
8	Rajan Pur	4	3	1	0	2
9	Layyah	10	5	5	0	3
10	R. Y. Khan	2	0	2	0	0
11	Jhang	3	2	1	0	1
12	Faisalabad	1	1	0	0	0
13	Sahiwal	1	1	0	0	0
14	Gujranwala	1	1	0	0	0
15	Jehlam	1	0	1	0	0
16	Bhakar	1	0	1	0	0
17	D. I. Khan	2	0	2	0	0
18	Total	277	130	147	0	42

struck very hard in some parts of the world as well as in Pakistan, especially south Punjab area.

In south Punjab largest number of cases has been reported in Nishtar Medical University Hospital Multan due to its large catchment area (Whole south Punjab, part of Sindh, Balochistan and KPK). It was therefore considered worthwhile to share the data / experience of such a big number of patients admitted in such a busy hospital.

Methodology

An audit was conducted to know about this epidemic of seasonal influenza. All cases who were admitted in two months duration (from 1st December 2017 to 31st January 2018) were included in this. Their charts were reviewed in detail specifically their symptoms in detail as well as their residential area, duration of

illness, co morbidity, Spo₂ (Oxygen saturation) at the time of presentation. Total cases were divided into two groups after getting PCR report i.e. negative and positive cases and treated accordingly.

Results

Total 277 suspected cases were admitted in isolation ward during these two months, most common symptom was shortness of breath which was present 60 percent cases, followed by fever (54 percent) influenza like illness followed by shortness of breath (35 percent) 130 cases (46.93%) turned out to be H1N1 positive by PCR and 147 cases (53.06%) were reported as negative. Bilateral radiological shadowing was present in 70 percent of positive group while 54 percent of negative group, age range was 3 to 90 years, male to female ratio was 1:1.5. Out of 277

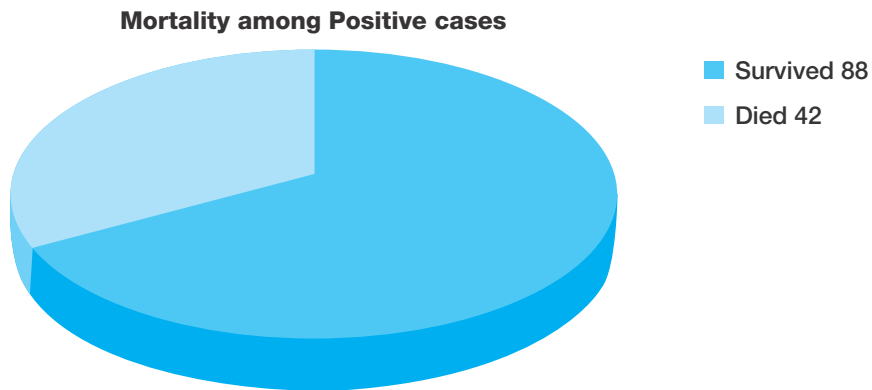


Fig 1: Pie Chart depicting mortality among positive cases

suspected cases 148 were from Multan or nearby, rest were from nearby districts. Out of all suspected cases 47 were admitted directly to ICU because they presented very late in their illness and were already having ARDS.⁴¹ out of these 47 ICU patients expired. One patient was received with undetectable oxygen saturation and expired before putting on ventilator.⁵ patients that were shifted to ICU survived. Average time duration from the onset of symptoms was 7 days and average Spo₂ at the time of presentation was 70 percent. Overall Mortality rate among these 130 cases was 32.3% (42 cases) 88 positive patients including all 17 children completed the treatment and were discharged from the isolation ward. Among children, most common presenting symptom was ILI and mild respiratory distress and their average time from onset of symptom to hospitalization was also low i.e. 04 days. Regarding co-morbidities, out of total 277 suspected cases 77 were having co morbidities, and out of total 130 positive cases, 60 were having comorbidities. These co morbidities were Diabetes in

21 cases, pregnancy in 12, chronic renal failure in 09 cases, heart failure (NYHA class 2 and 3) 06, chronic persistent asthma with chronic steroid use 5, epilepsy 04, treated Pulmonary TB with post TB bronchiectasis in 02 cases. In those 42 patients who expired, 40 were having co morbidities, in this expired group 09 were having only one co morbidity, 22 were having two co morbidities combined and 08 patients were having three co morbidities.

Discussion

We have conducted this audit in order to determine the gravity of situation as well as to know about the mortality. This study although did not cover every aspect about H1N1 but still very useful in a sense that it gave us idea that this epidemic hit large area of Punjab specially south one and cases were reported from more than 16 different areas of Punjab as shown in table 2. Epidemics do create panic among people that's why suspected cases are always high in number. In our study more than 50 percent cases were

negative for PCR but mortality was high 32.3% among the positive cases of H1N1 that showed that every third positive case of H1N1 expired in hospital. the reason for such a high mortality was associated with co morbidity. Some patients were suffering from multiple co morbidities. These co morbidities were Diabetes, pregnancy, Chronic Renal Failure, Congestive Heart Failure (NYHA class 3 or 4) two patients who expired were having no co morbidity and also in age range of 25 to 40, rest who expired were in a age range of 35 to 90. Three patients were epileptic and were taking anti epileptic medicine; further studies will guide more about this risk factor.¹⁷ Children were also admitted in positive group but fortunately there was no mortality among children. Respiratory symptoms were also mild in children and their average time from onset of symptom to hospitalization was also 04 days which may be a cause of no mortality among children, another cause may be that EPI (Expanded Program of Immunization) in all over the country includes pneumonia vaccination which have prevented the super added bacterial pneumonia and hence low mortality among children. But further research is needed to evaluate this finding. Amazingly no positive case was reported with malignancy or on anti cancer chemotherapy, an area of further research. Mean Spo2 at the time of presentation was below 70 percent and mean time from start of illness to presentation was 7 days which is very late, which could also be a cause of high mortality because patients had already developed ARDS (Acute Respiratory Distress Syndrome). Immense preventive measures should be taken in future in order to avoid such epidemics. Preventive measures include annual vaccination of all high risk patients especially those with risk factors described above and also children below 5 years of age and above 60 years of age and all health care workers. hands washing and cough etiquettes if followed can prevent the spread from person to person. Public awareness through media is also needed in order to prevent this disease.

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