

Research Paper

Medical Science



Epidemiological profile of Influenza A H1N1 cases in Western Rajasthan in year 2013

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ABSTRACT

Aims: To study the epidemiological profile of Influenza A H1N1 cases in Western Rajasthan in year 2013.

Methods and Material: Epidemiological characteristics of Influenza A H1N1 cases in Western Rajasthan from 1st January 2013 to 15th February 2013 were retrospectively, descriptively analyzed using data from the swine flu control room, Influenza A H1N1 screening centre and isolation wards at the Dr.S.N. Medical College, Jodhpur. Dr.S.N. Medical College, Jodhpur is a largest multispecialty tertiary care teaching institution in Western Rajasthan. Data were Analyzed using MS Excel software.

Results: At Dr. SNMC, from 1st January 2013 to 15th February 2013, a total number of 637 patients were tested for Influenza A H1N1, of which 24.6% (157) were found to be positive for the disease. Majority (63.1%, 99) of cases were females. The patients >15-45 years of age accounted for 65.0% (102) of the cases. Influenza A H1N1 resulted in death of 21.0% (33) of the total cases, of which 60% (15) deaths occurred within 48 h of admission. Majority (63.6%, 21) of deaths occurred in females. The patients >15-45 years of age accounted for 72.7% of the deaths. 37.6% (59) of cases and 39.4% (13) of deaths have occurred in pregnant and postpartum women.

Conclusions: Influenza A H1N1 virus once again resurfacing in western Rajasthan and reared its ugly head in the western Rajasthan in year 2013. Similar to H1N1 pandemic 2009, the incidence and mortality in 2013 in western Rajasthan was higher in young. H1N1 influenza can cause severe illness and deaths in pregnant and 1postpartum women.

Keywords : H1N1, Swine Flu, Western Rajasthan, Pandemic.

INTRODUCTION:

H1N1 is a novel strain of Influenza A virus that evolved by genetic reassortment. Following its emergence in March 2009 in Mexico, H1N1 virus spread rapidly throughout the world.^[1] WHO declared H1N1 as a pandemic on 11th June, 2009.^[1] This was the first of its kind declaration by WHO in the past 70 years.^[1] The disease started in India in the month of May 2009 and the first laboratory-confirmed case was reported from Hyderabad on 16May.^[2] Soon the disease spread to other parts of the country. During pandemic large number of cases and deaths occurred in India.WHO Declared H1N1 Post- Pandemic on 10 August 2010.The pandemic influenza A H1N1 virus is now circulating as seasonal influenza A H1N1 virus.

The state of Rajasthan which is the largest state in India reported its first case of H1N1 on 23 July 2009.^[3] Soon the disease spread to other parts of the state. A large number of H1N1cases (584 cases) and deaths (80 deaths) have been reported in Western Rajasthan during pandemic of H1N1 in year 2009-10. After that in year 2011 and 2012, Western Rajasthan reported little influenza activity.

In 2013 there is a sharp upsurge of influenza A H1N1 cases in north India.^[4]In 2013(since 1st January) Rajasthan reported highest number of H1N1cases and deaths in the country.^[4] Recent Influenza A H1N1 infection worsely affected the Western part of Rajasthan specially Jodhpur district.

This study is aimed to give an idea regarding the epidemiological trends of the H1N1dieases in western Rajasthan in year 2013. As there are very limited studies relating to Influenza A H1N1 and its epidemiology in the Indian situation, this study aimed to study the epidemiologic profile of patients

found positive for Influenza A H1N1 in Western Rajasthan.

MATERIALS AND METHODS:

The Dr.S.N. Medical College, Jodhpur is a largest multispecialty tertiary care teaching institution in Western Rajasthan with capacity of approximately 2000 beds. Four Government hospitals attached to this Medical College. There is a screening centre and isolation ward with critical care facility for Influenza A H1N1 patients in all these four hospitals to provide necessary medical care.

There is a swine flu control room at Dr.SNMC for monitoring of Influenza A H1N1. Function of swine flu control room is collect information about all suspected and confirmed cases of H1N1 and keep complete data of all the patients visiting these screening centres and swine Flu wards. In order to study the epidemiology and establish the magnitude and severity of Influenza A H1N1 in Western Rajasthan in year 2013, a retrospective, descriptive study was carried out at the Dr.S.N. Medical College, Jodhpur.

Data of swine flu cases from 1st January 2013 to 15th February 2013 were taken from the Swine flu control room. Epidemiological characteristics were analyzed in terms of demographic characteristics, clinical presentation and outcome.

Data were analyzed using Microsoft Excel Software and basic statistical measures like mean, median, percentage, etc. were calculated.

RESULTS:

The Dr.S.N. Medical College, Jodhpur is a largest multispecialty tertiary care teaching institution in the Western Ra-

jasthan. Screening, testing and treatment of H1N1 patients are done at Dr.SNMC, according to the guidelines of the Ministry of Health and Family Welfare, New Delhi. A retrospective, descriptive study was carried out at the Dr. SNMC, Jodhpur to study the epidemiological profile of H1N1 cases in Western Rajasthan from 1st January 2013 to 15th February 2013.

In this period ,637 suspected patients were tested, of which 24.64 % (157) were found to be H1N1positive.A total of 132 confirmed cases were admitted in the Influenza A H1N1 isolation wards, of which 25% (33 cases) succumbed to the disease. The case fatality ratio was found to be 21.0%. Dr. SNMC received patients from Jodhpur, Barmer, Jaisalmer, Pali, Nagour and Jalore district of the Western Rajasthan [Table 1]. The Maximum numbers of cases (66.9%, 105) were seen in Jodhpur district [Table 1].

Table 1: District wise distribution of Influenza A H1N1 cases and deaths from 1st January 2013 to 15th February 2013 in Western Rajasthan

District	Confirmed Cases	Deaths
Jodhpur	105	15
Pali	10	2
Barmer	20	10
Jaisalmer	14	5
Nagour	7	1
Jalore	1	0
Total	157	33

Table 2: Morbidity and mortality due to Influenza A H1N1 from 1st January 2013 to 15th February 2013 in Western Rajasthan

Age group (Years)	Male					Female				
	Positive		Deaths		Case fatality ratio %	Positive		Deaths		Case fatality ratio
	No.	%	No.	%		No.	%	No.	%	
0-15	13	22.4	01	8.3	7.7	05	5.1	0	00.0	00.0
>15-30	10	17.2	04	33.4	40.0	60	60.6	13	62.0	21.7
>30-45	10	17.2	01	8.3	10.0	22	22.2	6	28.6	27.3
>45-60	16	27.7	05	41.7	31.2	09	9.1	1	4.8	11.1
>60	09	15.5	01	8.3	11.1	03	3.0	1	4.8	33.3
Total	58	100	12	100	20.7	99	100	21	100	21.2

Out of total 157 Influenza A H1N1 cases 33 had expired with an overall case fatality rate of 21.0%. All patients who died required intensive care and ventilator support. Maximum deaths occurred in Jodhpur district (15 deaths) followed by Barmer (10). Whereas Jaisalmer, Pali and Nagour had reported 5, 2 and 2 deaths respectively [Table 1]. 63.6% (21) deaths occurred in females and the rest occurred in males. It can be seen from Table 2 that 72.7% deaths occurred in the age group >15-45 years, with 44.6% (17) deaths in the age group >15-30 years and 20.4% (7) deaths in the age group >30 to 45 years. Only 3 deaths had occurred in population at the extremes of age (0-15 and >60 years). Of the total 33 deaths, 60% (20) occurred within 1 to 3 days of admission.

Pregnancy and influenza A H1N1 Infection

37.6% (59 out of 157) of total H1N1 cases and 59.6 % of total female cases (59 out of 99) have occurred in pregnant and postpartum women [Table 3].

Table 3: Pregnancy and H1N1 Infection

	Cases	Deaths	Case fatality ratio (%)
Pregnant	59	13	22.0
Non-Pregnant	40	08	20.0
Total	99	21	21.2

39.4% (13 out of 33) of total deaths and 61.9% of female deaths (13 out of 21) caused by H1N1 influenza A virus have occurred in pregnant and postpartum women [Table 3]. Of the 59 H1N1 positive pregnant and postpartum women 41 were pregnant and 18 were postpartum. Out of 59 pregnant patients, 56 (38 who were pregnant and 18 who were postpartum) requiring hospitalisation. Of the 41 pregnant patients,

The number of Influenza A H1N1 cases gradually escalated from the month of September 2012 reaching a peak in the winter months. The Western Rajasthan had reported 101 cases and 21 deaths in the month of January 2013. In the month of February (Till 15 Feb.) 56 cases and 12 deaths reported.

Characteristics of influenza A H1N1 cases

In year 2013, from 1st January 2013 to 15th February, 637 patients were tested for H1 N1 at Dr.SNMC, of which 24.6 % (157) were found to be positive. Patient's age varied from 4 months to 85 years, with an average age of 32.7 years (median age of 30 years). From Table 2, it can be seen that of the total cases, 63.1% (99 cases) were female and 36.9% (58 cases) were male. Influenza A H1N1 primarily affected the younger population, with patients >15-45 years age group accounting for 65.0% (102 cases) of the total cases [Table 2]. The age group of >15-30 years accounted for 44.6% (70 cases) and >30-45 years age group comprised 20.4% (32 cases) of the total cases [Table 2]. 60.6% of the total positive patients in females were of the age group >15-30 years. The age group of 0-15 years comprised only 11.5% (18 cases) of the total cases, of which 11 cases occurred in children less than 5 year of age. Population at the extremes of age (0-15 and >60 years) formed 19.1% (11.5% and 7.6%, respectively) of the total positive patients [Table 2]. From Table 2, it can be hypothesised that Influenza A H1N1 has caused huge morbidity among the younger population, i.e., in the age group of >15-30 years and the older population got relatively spared.

6 (14.6%) were in the first trimester, 8 (19.5%) were in the second trimester and 27 (65.9%) were in the third trimester.

DISCUSSION

All the cases from 1st January 2013 to 15th February 2013 reporting to the Influenza A H1N1 screening centre, outpatient department and emergency department of Dr. SNMC were included in this study.

Dr.SNMC had cases from Jodhpur, Barmer, Jaisalmer, Pali, Nagour and Jalore districts of the Western Rajasthan, which may reflect the trend, morbidity and mortality of Influenza A H1N1 in this part of India. Majority (66.9%, 105 out of 157) of cases reported from Jodhpur district.

Total 576 cases of Influenza A H1N1 were registered in the India in year 2013 (Till 9th February) with a case fatality ratio of 17.9% (103 deaths).^[4]

Rajasthan reported highest number of H1N1 cases and deaths in the country in year 2013 since 1st January.^[4] Recent Influenza A H1N1 infection worsely affected the Western part of Rajasthan specially Jodhpur district. In Western Rajasthan a total number of 157 Influenza A H1N1 cases and 33 deaths (case fatality ratio-20.9%) were reported in this period (from 1st January 2013 to 15th February 2013).

A large number of H1N1 cases (584 cases) and deaths (80 deaths) have been reported in Western Rajasthan during pandemic of H1N1 in year 2009-10. Now once again H1N1 infection posed a serious threat to health community in Western Rajasthan.

Present study reported case fatality ratio of Influenza A H1N1 was 21.0%. A Puvanalingam et al (2010) in their study in two government hospitals in Chennai observed case fatality rate of H1N1 was only 1.8%.^[5] Tanvir Samra et al (2010) in their study in tertiary care hospital in Northern India reported case fatality rate of H1N1 was 5%.^[6] High prevalence and mortality may be attributed to the study population restricted to a small geographical area when compared against the entire country and sick patients referred from adjacent desert parts having delay in essential medical care required, with loss of crucial time.

In present study it was observed that majority (63.1%) of cases were female and only 36.9% cases were male. In contrast, A Puvanalingam et al (2010) in their study observed that more cases occurred in male (54%) as compared to female (46%).^[5] Majority (69.6%) of deaths caused by H1N1 influenza A virus have occurred in female. This is similar to that reported in other studies.^[5, 7] This indicating not only a late referral but also the severity of disease being more in women, especially, pregnant women.

Age of patient varied from 4 months to 85 years, with an average age of 32.7 years (median age of 30 years). 65.0% of total cases and 72.7% of total mortality was observed in patients with >15-45 years of age, which clearly reflects its high prevalence, morbidity and mortality among the younger population. This is similar to that reported in other studies.^[5] According to a study, the prevalence of Influenza A H1N1 in 2009 was greatest among children and young adults, although older patients and those with co-morbidities are more likely to experience worse clinical outcome.^[9] Similarly, a study done in New Zealand concluded that, in 2009, Influenza A H1N1 predominantly affected young women with relative sparing of the elderly population.^[10] According to a study done in Queensland, a large number of cases were reported in the 10-19 years age group (28%), followed by the 20-29 years age group (26%).^[11] In contrast, Himanshu Rana et al (2010) in their study observed a very high H1N1 mortality in those above 45 years of age (case fatality of 26.8%).^[7]

In our study, approximately 37.6% (59 out of 157) of cases and 59.6% (13 out of 33) of deaths caused by H1N1 influenza A virus have occurred in pregnant and postpartum women. During prior influenza epidemics and pandemics, as well as during the pandemic (2009), pregnant women have had increased morbidity and mortality.^[12] Similarly in our study mortality rate in H1N1 influenza in pregnancy was found to be 22.0% (13 out of 59). During previous influenza pandemics, increased rates of spontaneous abortion and preterm birth have been reported among pregnant women, especially in those with pneumonia.^[13] H1N1 influenza infection was more common in the third trimester of pregnancy (65.9%). Similar to our analysis, A Puvanalingam et al (2010) in their study in two government hospitals in Chennai also observed the high case fatality (25%, 3 out of the 12 cases) among pregnant women.^[5] Although patients in this study comprised a sizeable proportion of cases from Jodhpur and the adjoining districts of the Western Rajasthan, the findings of this study need to be carefully extrapolated and cannot be generalized to a large population. This is one of the limitations of our study. Secondly, we restricted our study to only hospital; therefore, many cases of Influenza A H1N1 may have been missed. Not being a community-based study, we may not be able to calculate the exact measures of epidemiology. Thirdly, regional geographical conditions have not been accounted for, which may have a significant impact on prevalence and morbidity. There may be a small number of cases that may have been missed out, although every attempt was taken to include all the cases, but this figure would not have been significant.

CONCLUSION

The incidence and mortality from H1N1 in Western Rajasthan in 2013 was significantly higher in young, more during the winter months. Jodhpur and Barmer were the most affected districts in the Western Rajasthan. H1N1 influenza can cause severe illness and death in pregnant and postpartum women; regardless of the results of testing, prompt evaluation and antiviral treatment of influenza-like illness should be considered in such women.

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