Study of Clinico-Epidemological Features of the Hospitalized Patients of Confirmed Influenza A (H1N1) Virus Infection in Government Medical College, Latur, Maharashtra

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Research Article

Abstract: **Background:** After emergence of Influenza A (H1N1) in March 2009, its pandemic spread rapidly throughout the world, leading to the declaration of an Influenza pandemic by WHO on 11 June 2009. In India, the number of new cases, including fatal cases continuous to increase since mid-June 2009 in several states particularly in Maharashtra. **Objective:** To study clinico-epidemological features of the hospitalized patients of confirmed Influenza A (H1N1) virus infection in Govt. medical college, Latur. **Methods:** It is a record based cross-sectional study. This study summarizes the clinical and epidemiological characteristics of 108 confirmed cases of Influenza A (H1N1) virus infection, hospitalized in Govt. medical college, Latur, during Aug 2009 to Oct 2009. Real Time Reverse Transcriptase- polymerase chain reaction RT-PCR was used to confirm the cases. Data were obtained from record section and swine flu ward. Complete data were entered in MS-Excel and analysis was done by using appropriate statistical test. **Results:** There were total 407 suspected cases. Of which 108 (26.53%) were confirmed cases. Of 108 confirmed cases, median age was 23 yrs. There were 75 (69.44%) and 68 (62.96%) were belongs from urban area. Recent history of travel was given by 8(7.40%). Case fatality rate was 9.25%. the most common complaint was of symptoms of respiratory tract infection (100%) and fever (88.88%). Pneumonia was reported in 88.88% patients on chest radiography. **Conclusion:** This study demonstrates that infection-related illness affects both children and adults with survival of 90.74%. Underlying co-morbid condition was found as a significant risk factor for severe disease.

Keywords: Influenza A (H1N1), Latur, RT-PCR.

Introduction

Influenza A(H1N1) (earlier known as swine flu) is a new influenza virus causing illness in human beings. First detected in Mexico in April 2009, H1N1 influenza virus was originally referred as "swine flu" because many of the genes in this new strain were found in pigs in USA. It has been now found that H1N1 influenza virus is genetically "quadruple reassortant" of two swine strains, one human strain and one avian strain of influenza virus, large proportion of genes coming from swine strain(1,2). Soon after the outbreak of H1N1 virus in the USA and Mexico in March 2009, the Government of India started screening people coming from the affected countries at airports for swine flu symptoms. The first case of swine flu in India was found at the Hyderabad airport on 13 May, when a man traveling from USA to India was found H1N1 positive. Subsequently, more confirmed cases were reported and as the rate of transmission of the flu increased in the beginning of August, with the first death due to swine flu in India in Pune, Maharashtra panic began to spread (3). In India, the number of new cases, including fatal cases continuous to increase since mid-June 2009 in several states particularly in Maharashtra. As of 2nd January 2011, 46412 cases of swine flu have been confirmed with 2728 deaths in India. Out of them 9972 cases and 937 deaths were from Maharashtra state (4).

Material and Methods

This was an record based cross sectional study conducted at Government Medical College, Latur, Maharashtra in the year 2009 and 2010. The permission of head of institution and clearance from ethical committee was obtained before starting the study. Two swabs from nasopharynx were collected from suspected patients for detection of Influenza A (H1N1) virus by RT-PCR assay (5). A suspected case was defined as an influenza like illness (temperature37.50 C and at least one of the following symptoms: sore throat, cough, rhinorrhea or nasal congestion) and either history of travel to a country where infection had been reported in the previous seven days or an epidemiologic link to a person with confirmed or suspected infection in the previous seven days (5). A confirmed case was defined by a positive result of real time reverse transcriptase polymerase chain reaction (RT-PCR) assay performed at a laboratory operated under the auspices of the state government

(NIV, PUNE). Close contact was defined as person who lived or was exposed to the respiratory secretions or other bodily fluids of patients with suspected or confirmed influenza (H1N1) infection (5). During the year 2009 throat swab samples of 407 suspected patients were sent for RT-PCR test, out of which 108 cases come positive. A pre-tested structured data sheet was used to retrieve the data. Several types of data collected from the records include, demographic data, any coexisting conditions, regarding onset of illness and treatment, data regarding hospitalization and disease outcome were collected. All the data was entered in MS Excel and analyzed by using appropriate statistical test.

Results

During the year 2009 throat swab samples of 407 suspected patients were sent for RT-PCR test, out of which 108 cases come positive. So, records of these 108 cases were taken for analysis. Table 1 shows baseline characteristics of swine flu cases. All the patients range between the age of 6-75 year with median age of 23 years. Out of 108 cases 50(46.29%) were between the age of 15-44 yrs and 48 (44.44%) were <15 yrs age. 75 (69.44%) were male and 68 (62.98%) belongs to urban area. Recent history of travel to infectious region was given by 8(7.40%) cases. Out of 108 cases, 98 (90.74%) were survived and 10 (9.25%) were expired.

Table 1: Showing Baseline characteristics

Characteristics	Number	Percentage
Age in years		
Median	23 yr.	
Range	6yr- 75yr	
Age gr. of positive patients		
< 15 yrs.	48	(44.44%)
15-44 yrs.	50	(46.29%)
45 -64yrs.	07	(6.48 %)
>65 yrs.	03	(2.77%)
Sex		
Male	75	(69.44%)
Female	33	(30. 55%)
Residence		
Rural	40	(37.03 %)
Urban	68	(62.96 %)
Recent H/O travel to infected region	08	(7.40%)
Outcome of patients		
Survived	98	(90.74%)
Expired	10	(09.25%)

Table 2- shows clinical features of confirmed cases. symptoms of ARI (LRTI and URTI) for 3-5 days was present in 60 (55.55%) of cases. Fever for 3-5 days was present in 42.70% cases; headache was present in 8.33% and vomiting in 9.25% cases. History of contact with infected person was given by 10.18% cases.

Table 2: Showing Clinical features

Characteristics	Number	Percentage
Clinical features	**ARI(URTI +LRTI)**	**n=108**
<2 days	22	(20.375%)
3-5 days	60	(55.55%)
6-8 days	17	(15.74 %)
>8 days	09	(8.33 %)
Fever		**n=96**
<2days	25	(26.04%)
3-5 days	41	(42.70%)
6-8 days	30	(31.25%)
>8days	12	(12.5 %)
Headache	09	(8.33%)
Vomiting	10	(9.25%)
H/O contact with infected person	11	(10.18%)

Table-3 shows underlying comorbid conditions. Comorbid condition was present in 21 cases. These were COPD (29%), hypertension (19%), pregnancy (19%), diabetes mellitus (13%), typhoid (10%) and malaria (10%).

Table 3: Showing comorbid conditions

Co-existing conditions	Number	Percentage
Diabetes mellitus	03	13
Hypertension	04	19
COPD	06	29
Pregnancy	04	19
Typhoid	02	10
Malaria	02	10
Total	21	100

able 4- shows laboratory and radiographic findings. Mean leukocyte count was 7275 ± 4762; leukocytosis was present in 25.55% and leucopenia in 20% cases. Anaemia was present in 37.78% of which 16.66% had mild, 12.22% had moderate and 8.88% had severe anaemia. Mean platelet count was 22000±135000. Thrombocytopenia was seen in 28.88% cases. Chest X-ray of 88.88% shows pneumonia. PS for malaria and Widal test for typhoid was positive in 2%.

Table 4: Showing Laboratory and radiographic findings

Characteristics	No.	(%)
Leukocyte count		
mean count	7275± 4762	
leukopenia (<4000/mm^3)	18/90	(20.00 %)
leukocytosis(>10000/mm^3)	23/90	(25.55%)
Anaemia		
mild (10-11 gm/dl)	15/90	(16.66%)
mod.(8-10 gm/dl)	11/90	(12.22%)
severe(<8gm/dl)	08/90	(8.88%)
Platelet count		
mean count	2,20000±135000	
thrombocytopenia(<150000/mm3)	26/90	(28.88%)
thrombocytosis(>735000/mm3)	17/90	(18.88%)
Chest X-ray findings		
Done	90/108	(83.33%)

Pneumonia	80/90	(88.88%)
PS for malaria	2/100	(2.00%)
Widal test	2/100	(2.00%)

Table-5 shows association of comorbid condition and mortality. Comorbid conditions are significantly associated with mortality (p<0.001, highly significant).

Table 5: Showing association of comorbid condition and mortality

Outcome of the patient	Comorbid condition		Total
	Present	Absent	
Survived	13	85	98
Death	8	2	10
Total	21	87	108

χ^2= 25.29, df=1, p <0.001 highly sign

Discussion

The present study described clinico-epidemological profile of patients with H1N1 influenza virus infection at GMC, Latur. Total 108 patients were found positive for swine flu among 407 suspected patients. Of the total 108 positive cases 8 occurred in August, 77 in September and 17 in October. This shows that swine flu occurs mainly during rainy season and winter as its transmission is more when humidity is high and temperature is low. Unlike most strains of Influenza, H1N1 doesn't disproportionately infect adult older than 60 yrs.; this was an unusual characteristic feature of the H1N1 pandemic (6). In our study oldest patient was of 75 yrs. Nearly half of the patients (46.29%) were in the age group 15-44 yrs. Similar result was shown by study at Surat (7) where maximum (70.77%) patient were from 15-50 yrs age group. Similarly in a study done at California (8), hospitalization rates were highest for young adults (age 18-29 yrs). Similarly study of V.R. Malkar(9) shows highest cases (51.67%) were in the age group of 16-25 yrs. These findings are in contrast with studies done at Mexico (10) and USA (11) when H1N1 influenza was common at extreme age group (<15 and>65 yrs.). Possible explanation for this may be that maximum number of patients at small town had infection due to travel to affected area and young have greater susceptibility of virus infection. Overall male patients outnumbered female patients (75/33). This male predominance was also observed by A.Puvalingam *et al* (12), K.N. Batta *et al* (7) and Rajesh Chausama *et al* (13) The most common clinical manifestation was symptoms of ARI (URTI+LRTI) and fever. Similar results were shown by V.R. Malkar *et al* (9), Chaudasma *et al* (13)and various Indian studies (7,12,13,14). Underlying comorbid condition was present in 21 (19.44%) cases. Chaudasma *et al*(13) 32.8% and V.R.Malkar *et al*(9) 40% shows various comorbid conditions. In our study, leukopenia was shown by 20% cases, anaemia in 37.78%, thrombocytopenia in 28.88%. Nearly similar result was shown by Chaudasma *et al*(13). In present study, on chest X-ray 88.88% shows pneumonia while Chaudasma *et al* (13) shows pneumonia on chest X-ray in 93%. Underlying comorbid condition was significantly associated with mortality; similar finding was shown by Chaudasma *et al*(13).

Conclusion

There were total 407 suspected cases, out of which 108 were confirmed cases. Median age was 23 yr and 69.44% were male. 62.96% were belongs to urban area and history of travel was given by 7.40%. Symptoms of ARI were present in all patients and fever in 88.88% cases. Pneumonia on chest X-ray was shown by 88.88%. study demonstrate that infection related illness affects both children and adult with survival of 90.74%. Underlying comorbid condition was significant risk factor for severe disease.

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