Original Article

Epidemiological and Clinical profile of patients with swine flu (Influenza A, H1N1) attending Guru Govindsingh Government Hospital, Jamnagar, India

Gelotar Prakash*

*Assistant Professor

Department of Microbiology, Shri M P Shah Govt. Medical College, Jamnagar, Gujarat, India

ABSTRACT

Background: Swine flu (Influenza A, H1N1 subtype) is an acute respiratory infectious disease. The 2009 pandemic of H1N1 influenza A rapidly spread globally, causing significant morbidity and mortality. It was first global pandemic since 1968.

Aims: The aim of the study is to summarize the clinical and epidemiological characteristics of cases of influenza A (H1N1) cases.

Material and Methods: Total 315 throat/ nasopharyngeal/nasal swabs were collected from category C patients. All the samples were tested by Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR).

Results: Most common symptoms identified in present study were cough (100%) followed by fever (96.46%), sore throat (80.53%), difficulties in breathing (72.56%) and nasal catarrh (39.82%).

Conclusion: Study highlights the identification of swine flu (Influenza A, H1N1 subtype) on clinical basis and emphasizes early initiation of antiviral treatment, immunisation and precautions.

Keywords: swine flu (Influenza A, H1N1 subtype), 2009 pandemic, clinical presentation, throat/nasopharyngeal/nasal swabs, RT-PCR

INTRODUCTION:

Swine flu is a highly contagious respiratory disease in pigs caused by swine influenza A viruses. In April 2009, cases of human infection with 2009 pandemic influenza A (H1N1) virus were identified in the United States [1] and Mexico [2]. Swine influenza A virus can be transmitted to humans either via contact with infected pigs or environment contamination with some influenza virus [3].

The disease then spread to other countries of the world that led the WHO to raise pandemic level of 5 to 6, the highest level in at least three countries in two of the six world regions defined by the WHO [4,5].

The first confirmed case of swine flu H1N1 in India was documented in May 2009, but large numbers of cases were reported after August 2009 [6]. From Gujarat, first H1N1 positive confirmed case was reported in June 2009 [7]. This study is an attempt to

summarize clinical and epidemiological features of 113 confirmed cases of 2009 pandemic influenza A (H1N1) virus infection, admitted in swine flu ward of G.G.Hospital, Jamnagar from July 2012 to August 2013.

MATERIAL AND METHODS

Categorization of Swine flu (Influenza A, H1N1 subtype) cases [8].

All the patients were categorised in category A, category B and category C as per guidelines on categorization of Influenza A (H1N1) cases given by Ministry of Health & Family Welfare, Government of India, (Revised on 05.10.09).

Category- A

- Patients with mild fever plus cough / sore throat with or without body ache, headache, diarrhoea and vomiting.
- They do not require Oseltamivir and symptomatic treatment should be given.
- The patients should be monitored for their progress and reassessed at 24 to 48 hours by the doctor.
- No testing of the patient for H1N1 is required.
- Patients should confine themselves at home and avoid mixing up with public and high risk members in the family.

Category-B

(i) In addition to all the signs and symptoms mentioned under Category-A, if the patient has high grade fever and severe sore throat, may require home isolation and Oseltamivir.

(ii) In addition to all the signs and symptoms mentioned under Category-A, individuals having one or more of the following high risk conditions shall be treated with Oseltamivir.

 ➢ Children with mild illness but with predisposing risk factors.
 ➢ Pregnant women;
 ➢ Persons aged 65 years or older;
 ➢ Patients with lung diseases, heart disease, liver disease, kidney disease, blood disorders, diabetes, neurological disorders, cancer and HIV/AIDS;
 ➢ Patients on long term cortisone therapy.

(iii) No test for H1N1 is required for Category-B (i) and (ii).

(iv) All patients of Category-B (i) and (ii) should confine themselves at home and avoid mixing with public and high risk members in the family.

Category-C

- In addition to the above signs and symptoms of Category-A and B, if the patient has one or more of the following:

 ➢ Breathlessness, chest pain, drowsiness, fall in blood pressure, sputum mixed with blood, bluish discolouration of nails;
 ➢ Children with influenza like illness that had a severe disease as manifested by the red flag signs. (Somnolence, high and persistent fever, inability to feed well, convulsions, shortness of breath, difficulty in breathing, etc).
 ➢ Worsening of underlying chronic conditions.

- All these patients mentioned above in Category-C require testing, immediate hospitalization and treatment.

Study population

Patients presented with clinical features suggestive of Influenza A (H1N1) in Category C were included in study.

Sample Size

A total of 315 throat/ nasopharyngeal/nasal swabs were collected and tested from suspected H1N1 (Influenza A) category C patients who visited outpatient department and admitted in Guru Govindsingh Government Hospital, Jamnagar from July 2012 to August 2013.

Data Collection

A standardized pre-structured questionnaire form was used to collect the clinical and epidemiological data of patients like age, sex, residence, communication detail, clinical signs & symptoms, exposure history, type & numbers of sample collected, treatment taken and chest x-ray findings.

Laboratory confirmation of infection:

The 2009 H1N1 virus was detected with the use of a real time RT-PCR assay in accordance with the protocol from the US centres for Disease Control and Prevention, as recommended by the WHO [9]. Two swabs from nasopharynx and one from pharynx were collected from suspected patients of category-C for detection of influenza A (H1N1) virus by real-time RT-PCR assay. Specimens were collected from all patients by using sterile nylon flocked swab. Samples were placed in 3-ml viral transport medium.

Ethical Considerations

Data collected for current study were a part of the diagnostic technique. So, ethical consideration was not needed.

RESULTS

Table 1: Distribution of cases according to H1N1 positivity

Total	Positive (%)	Negative (%)
315	113(35.87%)	202 (64.13%)

Table 1 shows that total 315 samples were tested from July 2012 to August 2013. 113(35.87%) samples were identified as positive for H1N1 and 202 (64.13%) were negative.

Table 2: Age and sex distribution of confirmed cases of H1N1 (n=113)

Variables	No. (%)
Age (in Years)	
1-10	32 (28.32)
11-20	12(10.62)
21-30	25(22.12)
31-40	14(12.39)
41-50	15(13.27)
51-60	08(7.08)
>60	07(6.20)
Total	113(100)
Sex	
Male	64 (56.64%)
Female	49 (43.36%)

Figures in parenthesis show percentages.

As per table no. 2, majority of patients were in the age group of 1 to 10 years (28.32%), followed by 21 to 30 years age (22.12%). The male: female ratio is 1.3.

Table 3: Distribution of cases according to clinical signs and symptom in confirmed cases of H1N1 (n=113)

Features	No. (%)
Fever	109 (96.46%)
Cough	113(100%)
Sore throat	91(80.53%)
Nasal catarrh	45(39.82%)
Difficulties in breathing	82(72.56%)

Table No. 3 shows predominant symptoms in confirmed cases of H1N1. Most common symptoms were cough (100%) followed by fever (96.46%), sore throat (80.53%), difficulties in breathing (72.56%) and nasal catarrh (39.82%).

Table 4: Chest x-ray findings in confirmed cases of H1N1. (n=113)

Chest x-ray findings	No. (%)
Bilateral consolidation	21(18.58%)
Right side consolidation	10(8.85%)
Left side consolidation	12(10.62%)
No consolidation	70(61.95%)

Table 4 shows the Chest x-ray diagnosis in confirmed cases of H1N1. Almost two thirds of patients had no consolidation in lungs. Bilateral consolidation was present in most number of cases (18.58%) followed by left side (10.62%) and right side (8.85%) consolidation, while 61.95% cases were identified without consolidation.

DISCUSSION

This study reports 113 patients with confirmed influenza A (H1N1) virus infection belonging to category C [8], who were hospitalized in Swine Flu ward of G.G.Hospital, Jamnagar from July 2012 to August 2013. Total 315 samples were tested, from which 113 (35.87%) were found positive.

Revdiwala S et al. [10] showed that H1N1 infection was more in males than females. Male:female ratio in positive cases was 2.6:1. In present study male (56.64%) were affected more than female (43.36%). M: F ratio in positive cases was 1.3:1. Male preponderance than female for H1N1 infection may be due to outdoor work.

In our study, majority of infections were observed in 1 to 10 years of age group (28.32%), followed by 21 to 30 years age group(22.12%). Reasons for more involvement of paediatrics patients than young adults were not known.

Srinivasa et al. [11] reported that common age group suffered with H1N1infection was 21-30 years (60%) followed by 31-40 (30%). Bellei NC et al. [12] also confirmed the great burden of 2009 pandemic H1N1 infection among young adults.

Common symptoms identified in present study were cough (100%) followed by fever (96.46%), sore throat (80.53%), breathlessness (72.56%) and nasal catarrh (39.82%). Common complains noticed by Chudasama et al. [13] were cough (96.7%), fever (92%), sore throat (54.4%), difficulties/shortness of breath (53.3%) and nasal catarrh (24.8%). In study of Srinivasa et al. [11] common symptoms identified were cough (100%), fever (90%), sore throat (25%), difficulties/shortness of breath (50%) while common findings noticed in study of Revdiwala S et al. [10] were cough (94.28%), fever (88.45%), sore throat (35.63%), nasal catarrh (51.39%).

In present study bilateral consolidation (18.58%) was noticed in most number of positive cases followed by left side (10.62%) and right side (8.85%) consolidation, while 61.95% cases were identified without consolidation. In a study of Revdiwala S et al [10] H1N1 cases with bilateral consolidation were found in 53%, left side consolidation in 29.4% and right side consolidation in 17.6% of patients.

LIMITATIONS

The data was taken only from hospitalized patients. Patients belonging to category B, treated on outpatient basis and not being tested, were not included. All diagnostic testing was clinically driven, and other investigations were not obtained in a standardized fashion. Despite the use of a standardized data collection form, not all information was collected for all patients.

CONCLUSION

Present study will help clinician to identify swine flu on clinical basis. Study highlights the identification of swine flu (Influenza A, H1N1 subtype) on clinical basis and emphasizes early initiation of antiviral treatment without waiting laboratory support, immunisation and special precautions.

ACKNOWLEDGMENT

Author is very grateful to all clinicians, hospital and laboratory staff of G.G.Hospital, Jamnagar for providing necessary clinical, epidemiological & radiological data.

REFERENCES

1. Swine influenza A (H1N1) virus infection in two children- Southern California, March-April 2009. MMWR Morb Mortal Wkly Rep 2009;58:400-402.
2. Outbreak of swine-origin influenza A (H1N1) virus infection - Mexico, March-April 2009. MMWR Morb Mortal Wkly Rep 2009; 58:467-470.
3. Bronze MS, H1N1 influenza (swine flu). Available from http://emedicine.medscape.com/article/1807048-overview (last accessed on 18 January, 2012.
4. World Health Organization. Influenza A (H1N1) – Update 14. Geneva.2009. Available from: http://www.who.int/csr/don/2009_05_04a/en/index.html (last accessed on 2010 Feb 27).
5. Ministry of Health and Family Welfare, Government of India. Human swine influenza: A pandemic threat. CD Alert. 2009;12:1-8.
6. The Times of India. First swine flu case surfaces in Gujarat.18th June, 2009. Available from: http//timesofindia.indiatimes.com/city/ahmedabad/ First- swine flu- case- surfaces- in- Gujarat/articleshow/4669250.cms.[Last accessed on May 01,2010]
7. The Indian Express. Saurashtra`s first confirmed swine flu case detected. 19th August, 2010. Available from: http://www.expressindia.com/latest-news/saurashtras-first-confirmed-swine-flu-case-detected-in-bhavnagar/503678/ [last accessed on 2010 Feb 27].
8. Ministry of Health & Family Welfare, Pandemic Influenza A (H1N1),Guidelines on categorization of Influenza A H1N1 cases during screening for home isolation, testing treatment, and hospitalization (Revised on 05.10.09) available from http://nvbdcpchd.gov.in/reporting%20formats/3.Categorisation%20of%20Influenza%20A%20H1N1%20cases%20screening.pdf (last accessed on 6 November, 2012).
9. World Health Organization. CDC protocol of real time RTPCR for swine influenza A (H1N1). Geneva. April 28, 2009. Available from: http://www.who.int/csr/resources/publications/swineflu/CDCrealtimeRTPCRprotocol_20090428.pdf[last accessed on 2010 Jan 15].
10. Revdiwala S, Mulla S, Panwala T, Shah L, Shah A. Clinical Characterisation Of H1N1 Influenza Taqman Real Time PCR Positive Cases. National Journal of Medical Research. 2012;2(1):12-14s.
11. Srinivasa R, Malini J, Nandini S, Umapathy B. Profile of H1N1 infection in a tertiary care centre. Indian Journal of Pathology &Microbiology 2011; 52(2); 323-325.

12. Bellei NC, Cabeca TK, Carraro E, Goto JM, Cuba GT, Hidalgo SR, et al. Pandemic H1N1 illness prognosis: evidence from clinical and epidemiological data from the first pandemic wave in Sa˜o Paulo, Brazil. Clinics.2013;68(6):840-845.
13. Chudasama RK, Patel UV, Verma PB, Amin CD, Shah HM, Banerjee A, Patel RR. Characteristics of Fatal Cases of Pandemic Influenza A (H1N1) from September 2009 to January 2010 in Saurashtra Region, India. *Online J Health Allied Scs.* 2010;9(4):9

Corresponding Author:

Dr Prakash S Gelotar
Assistant Professor, Department of Microbiology
Shri M P Shah Govt. Medical College
Jamnagar, Gujarat, India
E-mail: drprakash_md@yahoo.co.in