

CLINICAL CHARACTERIZATION OF H1N1 INFLUENZA TAQMAN REAL TIME PCR POSITIVE CASES

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ABSTRACT

Background: A novel swine origin influenza virus (H1N1) is spreading worldwide and become the first pandemic of the 21st century. The currently circulating strain of swine origin influenza virus of the H1N1 strain has undergone triple reassortment and contains genes from the avian, swine and human viruses. H1N1 critical illness mostly affects young patients and it is often fatal.

Aim: The aim of the present study is to evaluate the clinical characteristic of H1N1 infection in a tertiary care institute.

Material & Methods: A total of 251 pharyngeal and nasal swabs from suspected cases of swineflu were processed by TaqMan real-time PCR (CDC protocol). Clinical co-relation with presenting sign and symptoms and analysis was done.

Results: 36 (14%) were confirmed as positive. The clinical picture was characterized by fever (88%), cough (94%), sorethroat (35%), nasal catarrh (51%), chest pain (0.4%). Chest X-ray findings suggested association of consolidation with positive cases (47%).

Discussion: Strong clinical association is seen in those who were It was also noted that 2009 H1N1 influenza illness predominantly affects young patients.

Conclusion: The knowledge and technology translation previously acquired through courses by health care providers were the key in controlling the first influenza A (H1N1) 2009 cases. Hospitalized cases of H1N1 influenza should be monitored carefully and vaccination is a good alternative to control such pandemic.

Keywords: H1N1 influenza, real-time PCR, swineflu, respiratory tract infection

INTRODUCTION

Swine influenza virus (SIV) is an infection caused by any strain of the influenza family of viruses that is usually prevalent in pigs¹. Actually, swine influenza (swine flu) is a common respiratory disease of pigs caused by type "A" influenza viruses. The Swine "2009 flu pandemic" is a global out break of a new strain of influenza A virus H1N1 that is highly contagious disease of respiratory tract and has become a public health problem. The new strain is thought to be the result of reassortment of strains of influenza A virus subtype (H1N1). The new reassorted strain has acquired two new capabilities; human to human spread and enhanced virulence.¹⁻³

On 24 April, the WHO issued an official statement declaring a public health emergency of international interest. On 11 June, the pandemic alert level increased to phase 6, indicating that the human-to-human

transmission of the virus had occurred in at least two countries of two different WHO regions.²

Pregnant women, younger children, and people of any age with certain chronic lung or other medical conditions are appear to be at high risk of more complicated or severe illness. Many of these patients required intensive care.

MATERIALS AND METHODS

A total of 251 patients who visited outpatient department & admitted in the hospital from October 2009 to December 2010 were studied. These patients with clinical features of novel H1N1 Influenza virus, according to national guidelines comprising into category C, were tested and characterized. In India, revised guidelines on categorization of Influenza A H1N1 cases during screening for home isolation, testing, treatment & hospitalization was given by

Ministry of Health & Family welfare according to which all suspected cases were categorised into 3:²

CATEGORY A:

Patients with mild fever plus cough\sore throat with or without body ache, headache, diarrhoea, and vomiting.

CATEGORY B:

B1 .In addition to above signs & symptoms Patient has high grade fever & severe sore throat.

B2. Patient has 1 or more of the following high risk conditions:

- children with mild illness but with predisposing risk factors.
- pregnant women.
- persons aged more than 65 years or older.
- patients with lung disease, heart disease, liver disease, kidney disease, blood disorder , diabetes, neurological disorders , cancer & HIV\AIDS.
- patient on long term steroid therapy.

CATEGORY C:

In addition to the above signs & symptoms, patient has breathlessness, chest pain, drowsiness, fall in B.P, sputum mixed with blood, bluish discolouration of nails, worsening of underlying chronic conditions.

Specimen of throat swab and nasal swab were taken in viral transport media for the testing. All samples were tested by TaqMan real-time PCR (CDC protocol) for detection of novel H1N1 infection. Clinical co-relation with presenting sign and symptoms and test positivity was done. Clinical features which were studied are fever, cough, sore throat, difficulty in breathing, nasal catarrh and chest pain.^{5,6}

RESULTS

Total 251 patients were admitted as suspected cases for infection with the novel H1N1 virus, of which 36(14%) were confirmed as positive. They were positive for 4 markers; Inluenza A, Swine A, Swine H1 and Ribonuclease P (RNase P) used in real time PCR.

In total 251 patients 91 were female (36%) and 160 were male (64%) patients. In these 36 positive patients 10 were female (28%) and 26 were male (72%) patients. So M:F ratio in positive cases is 2.6:1.

According to age wise distribution in 36 positive cases, <14 years of age group comprises 12 cases (33%) and >14 years of age group comprises 24 cases (67%).

The clinical picture was characterized by fever (88%), cough(94%), sore throat(35%), nasal catarrh(51%), chest pain(0.4%). In chest X-ray of positive cases, most common finding was consolidation in 17 patients (47%). Consolidation was bilateral in 9 cases (53%), left sided in 5 cases (29.4%) and right sided in 3 cases (17.6%). Left lower zone was most common finding.

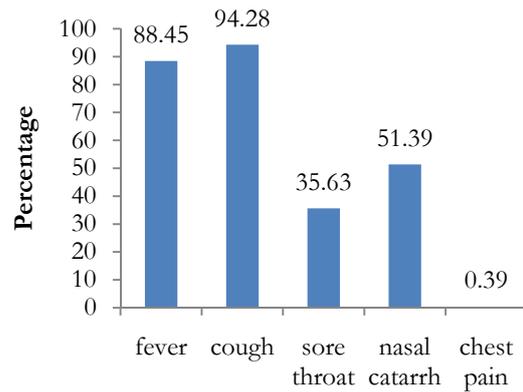


Fig 1: Association of different Clinical Features in H1N1 Real Time PCR Positive Cases

DISCUSSION

The H1N1 has caused pandemic alert all over the world since March 2009. In our study total of 251 patients were admitted during this period, out of which 36 cases were confirmed positive by TaqMan real-time PCR (CDC protocol). The findings showed that the common features with which the patients were presented were same as those of seasonal influenza. So it is important to rule out common influenza from the outbreak. In present study, fever (88%), cough (94%), sore throat (35%), nasal catarrh (51%) and chest pain (0.4%) were common presentations.

Srinivasa R. 2011 et al.¹ has showed that predominant complain was productive cough, fever with chills and rigors and breathlessness. The maximum number of positive cases were in the age group of 21-30 years (60%) followed by 31-40 years (30%). They are comparable to our study. Radiological examination showed 30% with ARDS and 30% with bronchopneumonia.¹

In one study by Felicia 2009 et al.; total 76 patients were admitted as suspected cases; out of which 13(17.1%)were confirmed as positive. In that study fever (100%), cough (92.3%), rhinorrhea (69.2%), malaise (53.8%), headache (53.8%), and only one case presented gastrointestinal symptoms (diarrhoea). The male: female ratio was 1:2.2.⁶

Khalid M. 2010 et al. showed that out of 121 suspected cases total 6 cases were positive. 100% patients presented with cough, fever and sore throat. Male to female ratio was 1: 2.5.⁴ so from this comparison we can see that in our study male were affected more than female, may be due to higher risk of exposure as they are more involved in fieldwork. We can also see that in the present study percentage of cases with fever and nasal catarrh was less in comparison with the other two studies. All other features were almost comparable. It is also seen that number of patients in less than 14 year age group were also more than other study.⁴

This type of study will help in doing comparison of various clinical presentations of Novel H1N1 cases in

different continents of the world and helps in identifying the positive cases on the bases of clinical ground.^{4,6}

CONCLUSION

Symptoms in most of the patients were in accordance with those described in the literature and were similar to those observed in seasonal influenza. So during clinical evaluation it is important to rule out the outbreak cases from seasonal viral infection. So if the seasonal influenza testing is also done along with this, it is possible to find out the incidence in the population. Clinician should include swine flu influenza A in the differential diagnosis of patients with acute febrile respiratory illness who have been in contact, or visit the community having positive cases of influenza. Treatment must be started without wasting much time in suspected patients to achieve maximum recovery. All the presenting clinical features were comparable with other studies except fever which was less common in present study.^{4,6,7,8}

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