

Clinical profile and outcome of H1N1 influenza in children- a tertiary care experience

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ABSTRACT

Background: H1N1 influenza pandemic began in Mexico in 2009 and soon spread to the other parts of the globe. The 2009 H1N1 virus contained a unique combination of gene segments that had not previously been identified in humans or animals. **Objective:** To study the clinical and epidemiological profile and outcome of H1N1 influenza among children admitted to pediatric ward and intensive care unit. **Materials and Methods:** Prospective data of 82 children with suspected influenza illness were collected, and throat swabs sent for reverse transcription polymerase chain reaction testing for H1N1. Epidemiological characteristics were analyzed in terms of clinical presentation and outcome. **Results:** Of the total 82 children with suspected influenza, majority (56.09%) were males, and majority (51.2%) were in the age group of 1-5 years. Throat swab was positive for H1N1 isolate in 22 (26.8%) cases. Clinically, all of them had flu-like illness. All 22 (100%) confirmed H1N1 cases had fever, 21 (95.4%) had cough, 18 (81.8%) had breathlessness, and 15 (68.1%) had running nose. 18 (81.8%) had chest X-ray abnormalities. 1 (4.5%) required mechanical ventilation and 1 (4.5%) succumbed to the illness. **Conclusion:** Fever, cough, breathlessness, and chest X-ray abnormalities were the most common presentation. A high index of suspicion of swine flu, during epidemics, and early treatment will lessen the mortality rates.

Key words: Children, Clinical profile, H1N1 influenza, Outcome

A new type of influenza virus infection, first reported in Mexico and United States emerged and spread rapidly throughout the world including India and causing pandemics. Due to viral mutation and emergence of new strain, there was the development of enhanced transmission ability and resistance to treatment of this new pandemic influenza virus [1]. In 2009, the highest attack rate was reported among children and young adults [2] with more than 340,000 laboratory confirmed cases and over 4100 deaths reported to WHO. Cases were also reported from different parts of India. In October, 2010, the total number of laboratory confirmed cases and deaths were 45,101 and 2679, respectively. After 2010, pandemic H1N1 influenza reappeared in several northern and western states of the country during the winter months of 2012-13. The resurgence in December 2014 was worse than the previous one, leading to over 30,000 cases and 2000 deaths countrywide (as of 28th March 2015) as compared to 5044 cases and 405 deaths in 2012 and 5250 cases and 692 deaths in 2013 [3]. This study was undertaken to study the clinical, epidemiological profile and outcome of swine flu among children admitted in a tertiary care center in Bengaluru.

MATERIALS AND METHODS

This prospective cross-sectional study was conducted in a Tertiary Care Institution of south India during the year 2015. All

children with suspected swine flu admitted to pediatric ward and intensive care unit in year 2015, and who consented for the study were included. Institutional Ethical Clearance was obtained. Children having any one of the following clinical features were suspected to have H1N1 infection (1) High-grade fever plus cough/severe sore throat, (2) mild fever, sore throat in <5 years of age, had chronic systemic illness, immunosuppressed conditions such as steroid therapy, nephritic syndrome, and HIV/AIDS, (3) breathlessness, chest pain, drowsiness, fall in blood pressure, hemoptysis, cyanosis, and (4) children with influenza-like illness with red flag signs: Somnolence, high/persistent fever, inability to feed well, convulsions, dyspnea/respiratory distress, etc.

Children belonging to Category A as per guidelines of National Health and Family Welfare and WHO (children with mild fever plus cough/sore throat with or without body ache, headache, diarrhea, and vomiting were excluded from the study. Oseltamivir was started on the day of admission (3 mg/kg for <1 year, 30 mg BD for <15 kg, 45 mg BD for 15.1-23 kg, 60 mg BD for 23.1-40 kg and 75 mg BD for >40 kg and for children older than 13 years) after sending throat swab for H1N1 (reverse transcription polymerase chain reaction), on day 1 or day 2 of illness. None of them had received influenza vaccine. Epidemiological characteristics were analyzed using Microsoft excel software in terms of clinical presentation and outcome.

RESULTS

A total number of suspected H1N1 influenza cases admitted during the study period was 82. Out of which, 42 (51.2%) were children in 1-5 years age group, 22 (26.8%) in 6-10 years age group, 14 were <1 year (17%) old, and 4 (4.8%) among 11-15 years age group. Majority 46 (56.09%) were males and 36 (43.9%) were females. Fever (100%), cough (97.5%), breathlessness (73.1%), and coryza (56.0%) were the predominant symptoms. Other symptoms were diarrhea (34.1%), sore throat (17.0%), and body ache (7.3%). 22 of 82 (26.8%) tested H1N1 positive. Among them all (100%) had fever, 21 (95.4%) had cough, 18 (81.8%) had breathlessness, and 15 (68.1%) had running nose while 18 (81.8%) had chest-ray abnormalities (bilateral infiltrates, or patch) (Fig. 1).

All the children were treated with oseltamivir. Of the 22 children with confirmed H1N1 influenza, majority showed improvement and were discharged. 1 (4.5%) required mechanical ventilation and succumbed to the illness due to worsening pneumonia with respiratory failure. There was not much of difference in H1N1 positive and H1N1 negative patients in treatment outcome, except in terms of mortality.

DISCUSSION

The 2009 pandemic of H1N1 influenza rapidly spread globally, causing significant mortality and morbidity. It was first global pandemic since 1968. H1N1 is a flu virus and spreads between people in the same way that seasonal flu viruses spread, i.e., through droplets or fomites. Incubation period is around 2-7 days. Symptoms of H1N1 are flu-like symptoms, fever, cough, coryza, headache, myalgia, and joint pain. Less common symptoms are vomiting, diarrhea, conjunctivitis, and parotitis. In our study, we observed that fever; cough, breathlessness, and coryza were the most common clinical features in both suspected and confirmed cases of H1N1 influenza. Similar findings were reported by Das et al. [2], Mehta et al. [4], Prakash [5], and Kumar et al. [6].

The majority were in the age group of 1-5 years and 56% were males, similar to other previous studies [1-6], and in contrary to the many studies which reported higher admission rate in females

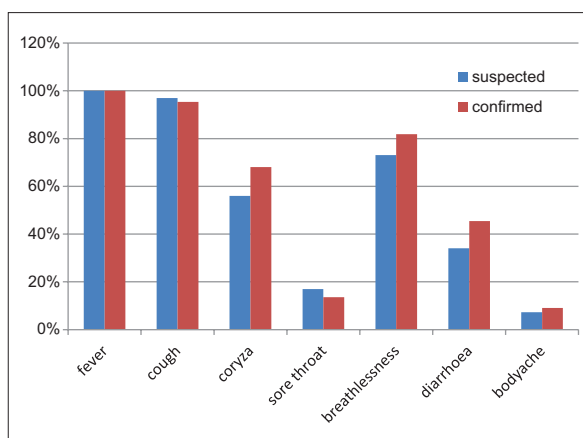


Figure 1: Comparison of symptoms in suspected and confirmed cases

than the males [7-10]. Among 82 suspected cases, 22 were H1N1 positive (26.8%), which was similar to the studies done by Sriram et al. [11] and Siddharth et al. [12]. Other studies had positivity rates of 47.5% [1], 47% [13], 37% [14], 30.2% [11], 29.58% [12], and 10.8% [6]. 81% of the confirmed cases had chest X-ray abnormalities, which was similar to study conducted by Kashinkunti et al. [15], while they were present in 48% [16] to 43.3% [6] cases in other studies.

All children were treated with oseltamivir and majority did not require mechanical ventilation. One child (4.5%) required mechanical ventilation and succumbed to the illness. The study was unique in proving a better outcome following early intervention. The study limitations include small sample size as it was a single center inpatient based study and secondly, disease is seasonal/epidemic.

CONCLUSION

A high index of suspicion of swine flu especially during epidemics and early intervention results in good outcome in terms of decreased need for invasive ventilation and reduced mortality.

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