



ORIGINAL RESEARCH PAPER

Paediatrics

CLINICAL SPECTRUM OF HOSPITALIZED CHILDREN INFECTED WITH H1N1: ANALYSIS DONE AT A TERTIARY HOSPITAL IN NORTH INDIA.

KEY WORDS:

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ABSTRACT H1N1 influenza A virus has caused massive morbidity and mortality worldwide and still is a threat. Clinical profile from adult patients had emerged from 2009 and 2015 outbreak, very little data is available on pediatric patients specially those requiring hospitalization. Due to adverse biological nature of the virus which involves structural and antigenic modifications, clinical presentation also needed to be updated. We have studied the clinical profile of 22 proven children infected with H1N1 who required admission.

INTRODUCTION

In the year 2009, a pandemic influenza A virus emerged and spread rapidly worldwide. In India alone the virus has killed 981 people in the pandemic.^{1,2,3} Since then every year there is rise in cases and deaths. In year 2015, the outbreak had become widespread throughout the country affecting 20 out of 26 states. A total of over 31,974 confirmed cases were reported out of which 1895 person died due to the disease.^{4,5}

There are several reports available among all hospitalized patients infected with H1N1 in 2009 outbreak from India and other affected countries, however pediatrics data was scarce. From the 2015 Indian flu outbreak, except for few case reports, clinical profile of hospitalized children is still not available.

This report provides clinical information of the proven H1N1 influenza infected patients below 12 years of age admitted to a tertiary hospital situated in northern India during 2015 flu outbreak.

Design.

From January 2015 to March 2015, approximately 145 hospitalized patients including adults and children with suspicion of flu were screened for H1N1 virus. Out of these, 22 children (<12 years of age) were found positive for H1N1. All details of patients who were hospitalized for atleast 24 hours were filled on standardized performa, patients in whom H1N1 was confirmed and admitted were assessed daily, few patients who were discharged and in whom confirmation for H1N1 was obtained later, in them medical case sheets were assessed retrogradely. Patient were confirmed of H1N1 infection using throat swabs from which virus was isolated using PCR method. The performa used included demographic data, clinical symptoms and signs, duration of onset of each symptom, complications, other associated medical condition, investigations, treatment given, intensive care required and outcomes.

RESULTS.

Presentation

In this study we are providing the clinical characteristic information of all hospitalized pediatric patients admitted to a tertiary referral hospital situated in North India. A total of 184 patients (<12 years) were screened for H1N1 infection out of which 36 were found positive. Out of them a total of 22 patients were admitted to the department of pediatrics. The patients were between 4 months to 12 years of age. Both sexes were equally affected. Mean duration of the onset of illness before hospitalization was 5 days and 12 hours. (Table 1)

Clinical Findings (Table 2)

Symptoms at presentation included- Fever, cough, coryza, respiratory distress, vomiting, pain abdomen and loose stools. Out

of 22 patients admitted, 8 had underlying illness- 2 patients were malnourished, 2 had rickets, 1 had severe anemia, 5 patients had neurological diseases- 1 with lenox gesttuat syndrome and 4 with global development delay. on presentation 2 patients had seizures, one was found hypocalcemic and in second cause was underlying seizure disorder.

Severe respiratory distress was found in 11 patients(50%), Moderate in 3 patients (18%), mild in 5 patients (25%), 3 patients presented to us with no respiratory distress.

On auscultating chest, 14 patients had bilateral crackles diffusely located in the lung fields, remaining 8 had clear chest.

Complications

- a) Pneumonia and ARDS- 19 (88%) patients had pneumonia out of them 3 developed ARDS.
- b) Pulmonary Bleed- 6 (27%) patients had pulmonary bleed, 2 presented with complaint of hemoptysis, 4 patients had pulmonary bleed which was observed after intubation inside ET.
- c) Shock- 5 patients found to have shock.

Diagnostic findings

Out of 22 patients admitted, 9 patients (40%) had leucopenia, differential counts was variable and found non specific. Chest xray imaging was done in all patients, 13 (59%) had findings consistent with pneumonia. Findings included bilateral opacities in 9 patients, 2 patients had opacities limited to one lobe, 2 patients had bilateral whiteout lungs and remaining had clear chest x ray. Among patients with clear chest x rays, 2 had no distress, 5 had mild distress and 2 had severe respiratory distress. Mean spo2 of the admitted patients on admission was 90%, 6 patients had spo2 more than 95%, 8 patients had spo2 between 90-95%, 4 patients had spo2 between 90 to 85% and 4 had spo2 below 85%.

Treatment

Out of 22 admitted patients, 8 patients (36%) had received antiviral therapy. The median time from onset of illness and to the start of antiviral drug was 4 days. In 2 patients therapy was started within 48 hours, in another 2 patients therapy was given early within 72 hours of onset of symptoms and in remaining 4 patients therapy was initiated after 5 days. Patients in whom therapy was started within 72 hours were all improved. Out of 22 patients antibiotics were started in 18 patients (79%). Salbutamol nebulization was given in 4 patients. Oxygen supplement was needed in 15 patients. 2 Patients were given injectable steroids and one received inj Mgso4. One child with severe anemia was given pack cell transfusion. Out of 22 patients, 6 patients were intubated all had respiratory failure as indication for Intubation.

Outcome

Out of 22 patients, 13 patients were discharged, 9 patients (40%) died, 6 patients out of 9 died had underlying medical condition prior to the illness. 4 patients out of 9 who expired received

antiviral treatment. Time of starting antiviral therapy among them was > 6 days of onset of illness.

DISCUSSION

Swine

In 2015, Swine flu had again hit Indian sub-continent badly. More than 30,000 cases were reported & 1895 deaths were notified.^{4,5} Disease spreads so rapidly from person to person via droplets, most of the cases remain undiagnosed and are mildly infected.⁶ There are data available, most of them studied on whole population mainly adults.^{7,8} Little studies are available isolated to pediatrics patient.⁹ Children infected with swine flu who were symptomatic and required hospitalization, were studied least.

In this study, we have discussed the clinical profile of 22 confirmed patients. In this study we have observed that apart from the fever and respiratory symptoms (cough, coryza, RD %) patients also presented with GIT symptoms (vomiting, diarrhea & pain abdomen). There are few other studies had observed GIT symptoms in confirmed swine flu patients.^{10,11,12}

Severe respiratory symptoms were present in 8 (40%) patients, all of them were suffering from underlying medical illness, 6 (75%) of them expired. It is well known that patients with underlying illness are more prone to poor outcome. High risk patients (i.e. – young children, old aged >50 years, pregnant, diabetic, chronic illness, neuromuscular disease and immunocompromised) has to be classified and treated accordingly.

Pulmonary bleed, ARDS and shock were the complications seen. In our study we found that mean SPO2 on admission was 90%. 8 patients (40%) had spo2 below 90% and 7 patients had spo2 below 94%. It is known that influenza virus infects airway and alveolar epithelium and multiplies there which may cause pulmonary infiltrates and hypoxaemia as evident in our results.

We have observed that patients in whom antiviral therapy was initiated initially within 72 hours, all of them had improved. Early identification of illness, initiation of therapy & support can modify the disease outcome. Presence of risk factors and pre-illness morbidity in patients acquired H1N1 infection needs strict monitoring and aggressive treatment.

CONCLUSION.

Swine flu is a rapidly progressing illness that can cause mortality within few days of disease onset. Respiratory symptoms with High grade fever are known, patients may also present with gastrointestinal symptoms. Presence of hypoxia is found characteristic. Presence of chronic illness and patients with high risk factors should be dealt cautiously. Therapy with antivirals should be initiated as early as possible to obtain beneficial effect. More studies are needed with large sample size specially on hospitalized patients to obtain more precise clinical profile and to see role of antiviral therapy.

Table 1.

S. No.	Characteristics	Number	Percentage
1. Total Patients	Hospitalized children infected with H1N1	22 (n)	
2. Age (1 month- 12 years)	1-3 months	1	
	3 m- 1 year	6	
	1 -5 years	10	
	5-10 years	4	
	10-12 years	1	
3. Sex	Male: Female	11:11	1:1

Table 2.

S. No.	Characteristics	Number	Percentage
1. Symptoms	Cough/Coryza	22	100%
	Fever	22	100%
	RD	20	90%
	Mild	6	
	Mod	3	
	Severe	11	50%
	Vomiting	5	22.7%
	Diarrhea	6	27%
	Pain Abdomen	4	18%

2. Spo2	>94	8	
	94-90	4	
	90-80	7	
	<80	3	
3. Complications	ARDS	3	13.6%
	Pulmonary Bleed	5	22.7%
	Shock	5	22.7%

REFERENCES

- Dawood FS, Jain S, Finelli L, Shaw MW, Lindstrom S, Garten RJ, et al. Emergence of a novel swine-origin influenza A (H1N1) virus in humans. *N Engl J Med.* 2009 Jun 18; 360(25):2605–2615.
- Cohen J, Enserink M. Swine flu. After delays, WHO agrees: the 2009 pandemic has begun. *Science.* 2009 Jun 19; 324(5934):1496–1497.
- Choudhry A1, Singh S, Khare S, Rai A, Rawat DS, Aggarwal RK, et al. Emergence of pandemic 2009 influenza A H1N1, India. *Indian J Med Res.* 2012;135:534–7
- Central Bureau of Health Intelligence. National Health Profile of India. 2009. [accessed on March 23, 2015]. Available from: <http://cbhidghs.nic.in/writereaddata/linkimages/8%20Health%20status%20Indicators4950277739.pdf>
- Press Trust of India (March 19, 2015). "Swine flu toll inches towards 1,900". *The Hindu.* Retrieved March 20, 2015
- Blachere FM, Lindsley WG, Pearce TA, Anderson SE, Fisher M, Khakoo R, et al. Measurement of airborne influenza virus in a hospital emergency department. *Clin Infect Dis.* 2009;48:438–40.
- Bharti Malhotra, Ruchi Singh, Pratibha Sharma, Deepa Meena, Jyoti Gupta, Aditya Atreya, B. R. Meena. Epidemiological & clinical profile of influenza A (H1N1) 2009 virus infections during 2015 epidemic in Rajasthan. *Indian J Med Res.* 2016 Dec; 144(6): 918–923.
- Sameer Arbat, Mitesh Dave, Vinit Niranjane, Irfan Rahman, Ashok Arbat. Analyzing the clinical profile of swine flu/influenza A H1N1 infection in central India: a retrospective study. *Virus disease.* 2017 Mar; 28(1): 33–38.
- Bernhard R. Ruf, Markus Knuf. The burden of seasonal and pandemic influenza in infants and children. *Eur J Pediatr.* 2014; 173(3): 265–276.
- David R. Hillyard, Novel swine-origin influenza A (H1N1) virus investigation team. *N Engl J Med.* 2009;360:25.
- Riquelme, A., M. Alvarez-Lobos, C. Pavez, P. Hasbun, J. Dabanch, C. Cofre, J. Jimenez, and M. Calvo. 2009. Gastrointestinal manifestations among Chilean patients infected with novel influenza A (H1N1) 2009 virus. *Gut* 58:1567-1568.
- Minodier L, Charrel RN, Ceccaldi PE, et al. Prevalence of gastrointestinal symptoms in patients with influenza, clinical significance, and pathophysiology of human influenza viruses in faecal samples: what do we know? *Virology.* 2015;12:215.