

Study of swine origin influenza a H1N1 virus infection in Maharashtra - A perspective approach

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Abstract

Background: The influenza originated from swine has H1N1 virus, which causes pandemic infection globally which attacks mainly young population. Hence attempt was to study the various stratifications of H1N1 viral infections. **Method:** 48 adult admitted at ICU having symptoms of H1N1 were studied which had RT-PCR positive. Their blood examination CBC, HB% S. cretanine SGPT, PH, Arterial blood gas FiO₂/paO₂ was also studied blood and urine culture chest x-ray was also studied to confirm the severity of H1N1 infection. **Results:** clinical magnification mainly respiratory distress- cough 21.4% fever 21% breathlessness 15% sore throat, 11.7% Nasal discharge, 11.4% expectoration, 11.2%, bodyache, 10.8% headache, 9.8%, vomiting, 6.8% diarrhea, 5.2%, fatigue 4.2%, laboratory findings- Anemia 7(14.5%) leucopenia 14(29.1%), thrombo cytopenia 5(10.4%), Renal dysfunction 10(20.8%), Hyperalbaineria 3(6.25%) SGPT 9(18.7%). In the comparative study of positive H1N1 and Negative H1N1 patients admitted at ICU was ARF during illness had in 14 positive patients and zero in -ve patients PH on admission in +ve patients was 7.4 to 0.2 and 7.1±0.1 in -ve patients Fio₂ in +ve was 90±52, 91±42 in -ve. In +ve patients PaO₂ was 46±15 in -ve 50±6. **Conclusion:** The early clinical management of H1N1 will be quite effective to prevent morbidity and mortalities moreover vaccination awareness also plays vital role to prevention of pandemic H1N1 virus.

Key Words: swim flue H1N1 PaO₂/FiO₂ ARDS= Acute respiratory distress syndrome

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INTRODUCTION

The first case of novel strain of influenza A virus (H1N1) was reported in Mexico on 2009¹. WHO declared pandemic with alert level within 3 months due to its global spread². Most of the H1N1 influenza infections present as mild or subclinical pneumonia but some present as severe community acquired pneumonia (CAP) and required admission to intensive care unit (ICU). The

main reason for admission to ICU is due to acute lung injury or acute respiratory distress syndrome (ALI/ARDS). It causes primary viral pneumonia with secondary bacterial infections (25-30%) and it is notoriously known to affect younger population³. Pneumonia is one of the common and serious complications of H1N1. The increased incidence of critical illness, along high transmissibility rate and rapid rise in cases over a short period of time which causes respiratory distress syndrome and proves fatal and admitted in ICU⁴. Moreover the patients with asthma neurological disorder, diabetes, immune suppression cardio vascular disorder, chronic renal disorder, COPD, diseases are more susceptible for getting H1N1 infection⁵. Hence attempt was made to study the adults infected with H1N1, admitted at ICU to assess the recent status and stratification of H1N1.

MATERIAL AND METHODS

48 adult patients admitted at PIMS hospital Islampur - 415409 Sangli(dist) Maharashtra having the signs and symptoms of swine origin influenza A, H1N1 virus infected were selected for study.

Inclusive criteria- Confirmed H1N1 influenza A virus detected by RT-PCR or culture were included in the study.

Exclusion criteria – Patients with influenza like illness with negative RT-PCR for swine influenza H1N1 and patients below 18 years, malignant of lungs were excluded from the study.

Method- Family history and occupation of each patient is recorded. In addition to this associated diseases like DM, liver or kidney diseases COPD, lung diseases, pregnancies were also noted. The H1N1 positive patients were admitted at ICU wards, Their blood examination CBC, Hb%, S. creatinine transfinite (SGPT) PH, Arterial blood gas (FiO2/PaO2) was also studied . Blood and urine culture, chest-x-ray. The duration of study was June 2016 to December 2019.

Statistical analysis- The clinical manifestation of H1N1 and laboratory findings were studied with percentage. Moreover status or conditions of H1N1 positive patients admitted at ICU were compared with H1N1-ve patients with various parameters to highlight the severity in the condition of H1N1 positive patients. The ratio of male and females 2:1

OBSERVATION AND RESULTS

Table-1 –The clinical manifestation were with, percentage cough- 21.4%, Fever 21%, breathiness, 15% sore throat, 11.7% Nasal discharges, 11.4% expectoration, 11.2 Bodyache, 10.8% headache, 9.8% vomiting, 6.8% diarrhea, 5.2% fatigue 4.2%,

Table 1: (No of patients 48)The Clinical manifestation observed in H1N1 patients

SI NO	Particulars	No of patients in percentage
1	Cough	21.4
2	Fever	21.0
3	Breathlessness	15
4	Sore throat nasal	11.7
5	Nasal discharge	11.4
6	Expectoration	11.2
7	Body ache	10.8
8	Headache	9.8
9	Vomiting	6.8
10	Diarrhea	5.2
11	Fatigue	4.2

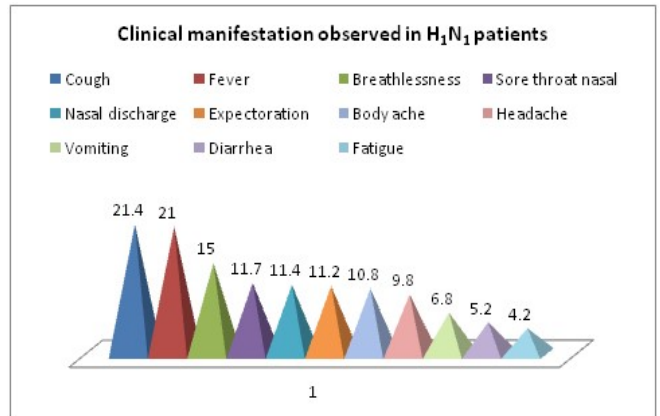


Table-2 –Study of laboratory findings in swine flue H1N1 patients Anemia(>10) 7(14.5, leucopenia (>4000/mm3) 14(29.1%), Thrombocytopenia (>1.5 lakh) 5(10.4%) Renal dysfunction (S.creatinine > 1.5mg/dl)10(20.8%), Hyper albuminemia (TSB>2.0 mg/dl)-3(6.25), SGPT (>45 IU)- 9(18.7%)

Table 2: (No of patients 48)Study of Laboratory findings in swine flu H1N1 patients

SI NO	Particulars	No of patients in percentage
1	Anemia (>10mg/dl)	7(14.5%)
2	Leucopenia (>4000/mm ³)	14(29.1%)
3	Thrombocytopenia (>1.5 lac/mm)	5(10.4%)
4	Renal dysfunction (S. creatime>1.5mg/dl)	10(20.8%)
5	Hyper albumemia (TSB>2.0 mg/dl)	3(6.25%)
6	SGPT(>45 IU)	9(18.7%)

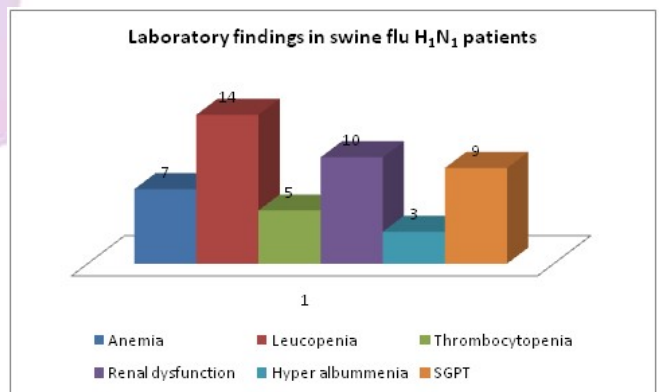


Table-3- Comparison of H1N1 positive and –ve patients admitted at ICU (48=+ve, 27=-ve, (a) ARF during illness was in 14 patients of +ve and Zero in –ve H1N1 patients, (b) stay at ICU – 3 to4 days for = -ve and 5 to 6 days for –ve patients (c) Duration of illness 7.4 to 0.2 in +ve and 7.1 to 0.1 in –ve patients, (d)Fio2 in in+ve 90±0.2 in +ve 90±5.2 and 91 ±42 in –ve patients (e) PaO2 was 46±15 in +ve and 50±6 in –ve patients (f) PH on admission was 7.4±0.2 in +ve 7.1±0.1 in –ve

Table 3: (No of patients 48) Comparison of H1N1 positive and H1N1 negative patients in ICU (48= H1N1 +ve) and 27= H1N1 -ve)

Variable at admission	H1N1 + ve=48	H1N1 -ve =27
ARF during illness	14	-
Stay at ICU (in days)	5 to 6	3 to 4
Duration of illness	6 to 8 days	5 to 6days
PH on admission	7.4 ±0.2	7.1 ±0.1
FiO ₂	90±52	91±42
PaO ₂	46±15	50±6

Fio₂= Fraction of inspired oxygen; PaO₂= Partial pressure of oxygen

DISCUSSION

In the present study of swine origin influenza A H1N1 virus infection Maharashtra. The clinical manifestations were cough 21.4%, fever 21%, breathiness 15%, sore throat 11.7% nasal discharge 11.4% expectoration 11.2% bodyache 10.8%, headache 9.8% vomiting 6.8% diarrhea, 5.2%, fatigue 4.2% ,(Table-1). The laboratory findings were-Anemia (>10) patients were 7(14.5%) leucopenia (>4000/mm³) were 14 (29.1%) thrombocytopenia (>1.5 lac/mm³) 5 (10.4%) Renal dysfunction (S. creatinin >1.5 mg/dl) were 10 (20.8%) Hyperalbumeneria (TSB> 2.0mg/dl) Transaminitis (SGPT> 45IU) were 9(18.7%) (Table-2). In the comparative study of H1N1 +ve and -ve patients Acute respiratory failure was in 14 patients and zero in -ve H1N1 patients. Stay at ICU in H1N1 was 5 to 6 and -ve were 3 to 4 days. Duration of illness was in H1N1 +ve patients 6 to 8 days in +ve and 5 to 6 days in -ve patients. PH on admission was 7.4 to 0.2 in +v end 7.1 + 0.1 in -ve patients FiO₂ rate was 90±52 in +ve and 91± 42 in -ve patients PaO₂ rate in +ve H1N1 was 46±15 and 50±6 in H1N1 -ve patients (Table-3). These remarkable difference in +ve and -ve H1N1 proves fatal to the infected patients. These findings were more less in agreement with previous studied^{5,6,7}. Influenza A viruses (IAVS) are the pathogens with high impact on public and animal health, several mechanisms, including high mutation rate, ressortment of genes and host switch are responsible for the genetic and antigenic evolution of IAVs⁹. It was reported that positivity of PCT in fatal cases, secondary bacterial pneumonia, such as staphylococcus aureus and streptococcus pneumoniae were observed in H1N1 viral infection¹⁰. In the present study it was observed that, subsequent human to human transmission seemed to be limited, hence for such zoonotic infection WHO to anticipate in selecting the vaccine strain candidates¹¹. In addition to this bio-security

measures should include actions aimed at reducing IAV interspecies transmissions hence use of protective mask and gloves and annual influenza vaccine to workers which deal with Pig or Pork industry.

SUMMARY AND CONCLUSION

Fever and breathlessness were the main presenting complaints. Tachypnea and tachycardia as clinical signs predict development of respiratory complications in H1N1 swine flu. ABG and PaO₂/ FiO₂ are important in deciding severity of lung injury and mode of ventilation. ARDS was observed to be the main cause of mortality serum PCT level estimation is also useful in determining outcome. Apart from this clinical management, vaccination and awareness regarding the swine flu mobility and mortality will be quite effective to save from such pandemic infection.

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