ORIGINAL RESEARCH PAPER

Volume-7 | Issue-5 | May-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

# A STUDY OF CLINICAL PROFILE OF SWINE FLU PATIENTS IN THE OUTBREAK OF 2015 IN TERTIARY CARE CENTRE AT JABALPUR

General Medicine

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## ABSTRACT

**AIM:** To study the clinical profile of H1N1 positive patients admitted in Swine flu ward in NSCB Medical College, Jabalpur in outbreak of 2015.

**MATERIALS & METHODS:** All H1N1 positive patients admitted in NSCB MCH, Jabalpur were analysed retrospectively with respect to morbidity and mortality and possible clinical conclusions were derived.

**RESULTS:** Of 64 H1N1 positive patients, 23 died. Cough, fever & dyspnoea were main symptoms in all patients including those under mortality group. Those with a duration of stay in hospital >10 days had least mortality. Highest mortality seen in patients with duration of stay between 1-10 days. 40 (62.5%) of 64 patients had some co-existing illness of which Anemia & DM were most common. 16 (69.5%) out of 23 patients who died had some co-existing illness of which DM was associated with 9 patients, Anaemia with 8 & Hypertension with 7 patients. 25 (39%) of 64 patients developed some complications of which ARDS & encephalopathy had higher mortality as compared to Renal failure & MODS. Of 23 patients who died, 18 (78%) developed some complication.

**CONCLUSION:** Knowing the potential of Influenza virus for genetic mutations, it is difficult to find a stereotype pattern of illness as also documented by studies done in past. Good clinical skills always carry high value in suspecting & defining H1N1 infection & its complications. Co-existing illness must be taken special care of during an outbreak of Swine flu. Community education, timely immunization of those at high risk & early referral can save many lives.

## KEYWORDS

H1N1, Swine flu, Outbreak, 2015, Jabalpur, India, Clinical profile, Complications.

## INTRODUCTION

Swine influenza is an acute, highly contagious, respiratory disease that results from infection with type A influenza virus. Swine influenza virus (SIV) is an orthomyxovirus of the influenza A group with hemagglutinating antigen H1 and neuraminidase antigen N1 (i.e., H1N1).[**1**] In India the first positive case of H1N1 was reported in May 2009.[**2**] Since then, India has experienced a significant number of outbreaks of H1N1. As the flu virus is well known for its potential for mutation which can produce challenges for the human immune system as well as can change the existing trends in morbidity and mortality caused by Swine flu, we decided to study the clinical profile of H1N1 patients reported in our hospital in outbreak of 2015 and try to find out potential factors associated with morbidity and mortality.

## AIM

To study the clinical profile of all H1N1 positive patients admitted in Swine flu ward in NSCB Medical College, Jabalpur from January 2015 to December 2015.

## METHODS

**Study Design**- A observation study with Retrospective analysis

**Selection of patients-**

**1.Inclusion criteria-** All H1N1 positive cases (including deaths due to H1N1) from January 2015 to December in 2015.

**2.Exclusion criteria**- All patients who were found to be H1N1 negative.

**Data collection**- From medical records of Swine flu ward in department of Medicine, NSCB Medical College, Jabalpur, M.P.

**Data Analysis**- The clinical data from all positive H1N1 patients shall be analysed & final results will be formulated.

All patients suspected of Swine flu were tested at National Institute for Research In Tribal Health, Jabalpur. Those found positive were admitted in Swine Flu isolation wards under Department of Medicine. Detailed clinical history and examination.

**ETHICAL CONSIDERATION**-Data collected for current study were a part of the diagnostic and management technique. So, ethical consideration was not needed.

## RESULTS

Total 64 patients were found to be H1N1 positive of which 46 were female & 18 were male. Patients were from age group 17 to 80 years with mean age of 45 yr. No mean age difference found among both sexes. **(Table 3)** Most cases were from age group >25 yr. **(Table 1)** Total 23 patients died (10 male & 13 female) with a male: female mortality ratio of 0.77. H1N1 cases occurred in 2 seasons- from January to April 2015 (total 50 cases) & from August to October 2015 (total 14 cases. All the mortality was found only from cases of January to April 2015. No mortality occurred in August to October 2015.

**(Table 2)**

**Chief complaints- (Table 5)** Cough was the main complaint in all 64 patients, fever in 59 patients, dyspnoea in 48, myalgia in 37, sputum expectoration in 35, sore throat in 24, rhinorrhea in 18, headache in 11, joint pain in 10, consciousness level was altered in 8 patients, haemoptysis in 2 patients & 1 patient with Abdominal pain/vomiting. None with diarrhoea & menstrual disorders.

**Associated comorbidities- (Table 6)** Total 24 patients (37.5%) out of 64were without any comorbidity while 40(62.5%) had some or the other co-existing illness. Anaemia in 17 patients, DM in 14, Hypertension in 10, COPD in 5, hypothyroidism in 4 & seizure disorder in 2 patients. 2 patients were pregnant. 1 case with IHD/cor pulmonale/hydropneumothorax/valvular heart disease/TB/CKD/chronic liver disease/CVA/post partum female/malignancy (Stomach Carcinoma). No case was found to be associated with bronchial asthma/hyperthyroidism/HIV/Hepatitis B.

**Among total 23 mortality**- 16 (69.5%) out of 23 patients who died had

some co-existing illness of which DM was associated with 9 patients, Anaemia with 8 & Hypertension with 7 patients. 1 case was associated with Tuberculosis/Chronic Liver disease/CVA/ malignancy.

**EXAMINATION- (Table 7) Among total 64 positive cases-** Avg. Pulse rate- 98/min., Avg. Respiratory rate- 21/min., Vesicular breathing in 36 & bronchial breathing in 28 patients, Avg. SBP & DBP was 116 mmHg & 72 mmHg respectively, Cyanosis in 4 patients, oedema in 1 patient. Jugular venous pressure was normal and lymph nodes were not palpable in any patient. Important findings in systemic examination were altered sensorium in 8 patients, tachycardia in 9 patients, bilateral lung crepitations in 44 patients and abdominal distension in 1 patient.

**Among total 23 mortality-** Avg. Pulse rate was 104/min., Avg. Respiratory rate 25/min., Vesicular breathing in 6 and bronchial breathing in 14 patients, systolic blood pressure was average 117 mmHg and diastolic blood pressure was average 78 mmHg, Cyanosis in 3 patients. None with oedema. Important findings in systemic examination were altered sensorium in 7 patients, tachycardia in 9 patients, bilateral lung crepitations in all 23 patients and abdominal distension in 1 patient.

**COMPLICATIONS- (Table 8)** 25 (39%) of 64 patients developed some complication of which-ARDS in 22 patients, encephalopathy in 8 patients, renal failure in 25 patients & MODS in 25 patients. Diabetic Ketoacidosis got precipitated in 1 female patient. Of 23 patients who died, 18 (78%) developed some complication.

**TABLE 1. Age and sex distribution of total positive H1N1 cases and mortality**

| AGE (IN YEARS) | Positive male ( % of total 64 ) | Positive female ( % of total 64) | Total (% of total 64) | Mortality (male) (% of total mortality) | Mortality (female) (% of total mortality) | Total (% of total mortality) | Mortality (male) (% of total male cases) | Mortality (female) (% of total female cases) |
|---|---|---|---|---|---|---|---|---|
| < or = 25 | 1 (1.5%) | 6 (9.4%) | 7 (11%) | 0 (0%) | 1 (4.3%) | 1 (4.3%) | 0 % | 16.6 % |
| >25 to < or = 50 | 10 (15.6%) | 28 (43.7%) | 38 (59.3 %) | 6 (26%) | 10 (43.5 %) | 16 (69.6 %) | 60 % | 35% |
| >50 | 7 (11%) | 12 (18.7%) | 19 (30%) | 4 (17.4 %) | 2 (8.7%) | 6 (26%) | 57 % | 16.6% |
| Total | 18 (28.1%) | 46 (71.8%) | 64 (100%) | 10 (43.4 %) | 13 (56.5 %) | 23 (100%) | 55.5 % | 28.2% |

**TABLE 3. Sex distribution of total positive cases and total mortality including their average age and duration of illness**

| | Male | Female | Total |
|---|---|---|---|
| Positive patients (% of total positive patients) | 18 (28.1%) | 46 (71.9%) | 64 |
| Positive patients Avg. Age (in years) | 50 | 43 | 45 |
| Avg. Duration of illness (in days) | 2.3 | 13.3 | 7.6 |
| Mortality (% of total male or female cases) | 10 (55.5%) | 13 (28%) | 23 |
| Mortality (% of total mortality) | 10 (43.4%) | 13 (56.5%) | 23 |
| Mortality Avg. Age (in years) | 52.4 | 43.3 | 47 |
| Mortality Avg. Duration of illness (in days) | 2.3 | 3.5 | 2.8 |

**TABLE 4. Sex distribution of total mortality with respect to duration of stay in hospital.**

| DURATION OF STAY | Male (% of total male mortality ) | Female (% of total female mortality ) | Total (% of total mortality) |
|---|---|---|---|
| Mortality in < or =1 day | 3 (30%) | 2 (15.4%) | 5 (21.7%) |
| Mortality in >1 day to < or = 10 days | 7 (70%) | 9 (69.2%) | 16 (69.6%) |
| Mortality in > 10 days | 0 | 2 (15.4%) | 2 (8.7%) |
| Total | 10 | 13 | 23 |

**TABLE2. Monthwisedistributionofcasesandmortality**

| MONTH (YEAR 2015) | POSITIVE MALE CASES (% OF TOTAL MALE CASES) | POSITIVE FEMALE CASES (% OF TOTAL FEMALE CASES) | TOTAL POSITIVE CASES (% OF TOTAL CASES) | MORTALITY (MALE) (% OF TOTAL MALE MORTALITY) | MORTALITY (FEMALE) (% OF TOTAL FEMALE MORTALITY) | TOTAL MORTALITY(% OF TOTAL MORTALITY) | MORTALITY % OF TOTAL POSITIVE CASES IN THAT MONTH |
|---|---|---|---|---|---|---|---|
| JANUARY | 1 (5.5%) | 0 | 1 (1.56%) | 1 (10%) | 0 | 1 (4.3%) | 100% |
| FEBRURARY | 9 (50%) | 15 (32.6%) | 24 (37.5%) | 7 (70%) | 8 (61.5%) | 15 (65.2%) | 62.5% |
| MARCH | 3 (16.6%) | 21 (45.6%) | 24 (37.5%) | 2 (20%) | 5 (38.5%) | 7 (30.4%) | 29 % |
| APRIL | 1 (5.5%) | 0 | 1 (1.5%) | 0 | 0 | 0 | 0 % |
| MAY | 0 | 0 | 0 | 0 | 0 | 0 | 0 % |
| JUNE | 0 | 0 | 0 | 0 | 0 | 0 | 0 % |
| JULY | 0 | 0 | 0 | 0 | 0 | 0 | 0 % |
| AUGUST | 0 | 2 (4.3%) | 2 (3.1%) | 0 | 0 | 0 | 0 % |
| SEPTEMBER | 3 (16.6%) | 6 (13%) | 9 (14%) | 0 | 0 | 0 | 0 % |
| OCTOBER | 1 (5.5%) | 2 (4.3%) | 3 (4.7%) | 0 | 0 | 0 | 0 % |
| NOVEMBER | 0 | 0 | 0 | 0 | 0 | 0 | 0 % |
| DECEMBER | 0 | 0 | 0 | 0 | 0 | 0 | 0 % |
| TOTAL | 18 | 46 | 64 | 10 | 13 | 23 | 35.93 % |

**TABLE 5. Sex distribution of total cases and total mortality with respect to presenting complaints at the time of admission**

| S.No. | Variable | Male (% of total 18 male) | Female (% of total 46 female) | Total (% of total 64 patients) | In hospital Mortality | | |
|---|---|---|---|---|---|---|---|
| | | | | | Male (% of total 10) | Female (% of total 13) | Total (% of total 23) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | Cough | 18 (100%) | 46 (100%) | 64 (100%) | 10 (100%) | 13 (100%) | 23 (100%) |
| 2 | Fever | 17 (94.4%) | 42(91.3%) | 59 (92.1%) | 10 (100%) | 13 (100%) | 23 (100%) |
| 3 | Dyspnoea | 15 (83.3%) | 33 (71.7%) | 48 (75%) | 10 (100%) | 13 (100%) | 23 (100%) |
| 4 | Myalgia | 11(61%) | 26 (56.5%) | 37 (57.8%) | 6 (60%) | 5 (38.4%) | 11 (48%) |
| 5 | Expectoration | 10 (55.5%) | 25 (54.3%) | 35 (54.68%) | 7 (70%) | 10 (77%) | 17 (74%) |
| 6 | Sore throat | 6 (33.3%) | 18 (39%) | 24 (37.5%) | 4 (40%) | 4 (31%) | 8 (35%) |
| 7 | Rhinorrhea | 4 (22.2%) | 14 (30%) | 18 (28%) | 2 (20%) | 4 (31%) | 6 (26%) |
| 8 | Headache | 1 (5.5%) | 10 (21.7%) | 11 (17.2%) | 0 (0%) | 1 (7.7%) | 1 (4.3%) |
| 9 | Joint pain | 4(22.2%) | 6 (13%) | 10 (15.62%) | 2 (20%) | 1 (7.7%) | 3 (13%) |
| 10 | Altered sensorium | 4 (22%) | 4 (8.7%) | 8 (12.5%) | 4 (40%) | 3 (23%) | 7 (30%) |
| 11 | Hemoptysis | 0 (0%) | 2 (4.3%) | 2 (3.12%) | 0 (0%) | 1 (7.7%) | 1 (4.3%) |
| 12 | Vomiting | 0 (0%) | 1 (2.1%) | 1 (1.56%) | 0 (0%) | 1 (7.7%) | 1 (4.3%) |
| 13 | Abdominal pain | 0 | 1 (2.1%) | 1 (1.56%) | 0 (0%) | 1 (7.7%) | 1 (4.3%) |

**TABLE 6. Sex distribution of total cases and total mortality with respect to co morbid illnesses**

| S.No. | Variable | Male (% of total 18) | Female (% of total 46) | Total (% of total 64) | In hospital mortality | | |
|---|---|---|---|---|---|---|---|
| | | | | | Male (% of total 10) | Female (% of total 13) | Total (% of total 23) |
| 1 | Anemia | 7 (39%) | 10 (22%) | 17 (26.56%) | 4 (40%) | 4 (31%) | 8 (35%) |
| 2 | Diabetes mellitus | 7 (39%) | 7 (15%) | 14 (21. %) | 5 (50%) | 4 (31%) | 9 (39%) |
| 3 | Hypertension | 4 (22%) | 6 (13%) | 10(15.62%) | 3 (30%) | 4 (31%) | 7 (30%) |
| 4 | COPD | 3 (17%) | 2 (4.3%) | 5 (7.8%) | 0 | 0 | 0 |
| 5 | Hypothyroidism | 0 | 4 (8.7%) | 4 (6.25%) | 0 | 0 | 0 |
| 6 | Seizure disorder | 0 | 2 (4.3%) | 2 (3.12%) | 0 | 0 | 0 |
| 6 | IHD | 0 | 1 (2.1%) | 1 (1.56%) | 0 | 0 | 0 |
| 7 | Cor pulmonale | 0 | 1 (2.1%) | 1 (1.56%) | 0 | 0 | 0 |
| 8 | Hydropneumothorax | 0 | 1 (2.1%) | 1 (1.56%) | 0 | 0 | 0 |
| 9 | Valvular heart disease | 0 | 1(2.1%) | 1 (1.56%) | 0 | 0 | 0 |
| 10 | Tuberculosis | 0 | 1 (2.1%) | 1 (1.56%) | 0 | 1 (7.7%) | 1 (4.3%) |
| 11 | CKD | 1(5.5%) | 0 | 1 (1.56%) | 0 | 0 | 0 |
| 12 | Chronic liver disease | 1(5.5%) | 0 | 1 (1.56%) | 1(10%) | 0 | 1 (4.3%) |
| 13 | CVA | 1(5.5%) | 0 | 1 (1.56%) | 1 (10%) | 0 | 1 (4.3%) |
| 14 | Malignancy | 1(5.5%) | 0 | 1 (1.56%) | 1 (10%) | 0 | 1 (4.3%) |

CKD- chronic kidney disease, COPD- Chronic obstructive pulmonary disease, IHD- ischemic heart disease

**TABLE 7. Sex distribution of total cases and total mortality with respect to clinical examination.**

| S. No. | Variable | POSITIVE Male (% of total male positive) | POSITIVE Female (% of total female positive) | Total POSITIVE patients (% of total positive) | In Hospital mortality | | |
|---|---|---|---|---|---|---|---|
| | | | | | Male | Female | Total |
| 1 | Pulse (per minute) | 76 to 132 (avg. 98) | 80 to 126 (avg.97) | 76 to 132 ( avg. 98) | 86 to 132 (avg. 107) | 80 to 126 (avg. 104) | 80 to 132 (avg. 104) |
| 2 | Respiration rate | 16 to 29 (avg. 22) | 15 to 36 (avg. 21) | 15 to 36 (Avg. 21) | 19 to 29 (avg. 24) | 18 to 36 (avg. 26) | 18 to 36 (avg. 25) |
| 3 | Type of respiration | Bronchial in 8 (44%), vesicular in 10 (56%) | Bronchial in 20 (43%), vesicular in 26 (57%) | Vesicular in 36 (56.2%), Bronchial in 28(43.75%) | Bronchial in 7 (70%), vesicular in 3 (30%) | Bronchial in 7 (54%), vesicular in 6 (46%) | Bronchial in 14 (61%), vesicular in 6 (46%) |
| 4 | SBP (in mmHg) | 90 to 140 (avg. 120) | 80 to 150 (avg. 114) | 80 to 150 (avg. 116) | 90 to 140 (avg. 117) | 80 to 150 (avg. 116) | 80 to 150 (avg. 117) |
| 5 | DBP (in mmHg.) | 60 to 90 (Avg. 78) | 60 to 90 (avg. 74) | 60 to 90 ( avg. 72) | 60 to 90 (avg. 76) | 60 to 90 (avg. 79) | 60 to 90 (avg. 78) |
| 6 | Cyanosis | 2 | 2 | 4 (6.25%) | 2 | 1 | 3 |
| 7 | Edema | 0 | 1 | 1 (1.56%) | 0 | 0 | 0 |
| 8 | JVP | 0 | 0 | Normal in all | 0 | 0 | 0 |
| 9 | Lymph node | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | Central nervous system | Impaired consciousness in 4 (22%) | Impaired consciousness in 4 (8.7%) | Consciousness impaired in 8 (12.5%) | Impaired consciousness in 4 (40%) | Impaired consciousness in 3 (23%) | Impaired consciousness in 7 (30%) |
| 11 | Cardiovascular system | Tachycardia in 4 patients (22%) | Tachycardia in 5 patients (11%) | Tachycardia in 9 patients (14%), | Tachycardia in 4 patients (40%) | Tachycardia in 5 patients (38%) | Tachycardia in 9 patients (39%) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 12 | Respiratory system | Bilateral crepitations in 14 (78%) | Bilateral crepitations in 30 (65%) | Bilateral crepitations in 44 (68.75%) | Bilateral crepitations in 10 (100%) | Bilateral crepitations in 13 (100%) | Bilateral crepitations in 23 (100%) |
| 13 | Gastrointestinal system | 0 | Distension in 1 patient (2.2%) | Distension in 1 patient (1.56%) | 0 | Distension in 1 patient (7.7%) | Distension in 1 patient (4.3%) |

JVP- Jugular venous pressure, SBP- Systolic blood pressure, DBP- Diastolic blood pressure

**TABLE 8. Sex distribution of total cases and total mortality with respect to complications.**

| S. No. | COMPLICATION | POSITIVE Male (% of total 18 male positive) | POSITIVE Female (% of total 46 female positive) | Total POSITIVE patients (% of total positive)- [a] | Mortality Male (% of total 10) | Mortality Female (% of total 13) | Total Mortality (% of total 23)- [b] | Complications in mortality group as a % of complication in total positive cases [b/a*100] |
|---|---|---|---|---|---|---|---|---|
| 1 | ARDS | 8 (44.4%) | 14 (30%) | 22 (34%) | 8 (80%) | 10 (77%) | 18 (78%) | 82% |
| 2 | ENCEPHALOPATHY | 4 (22%) | 4 (8.7%) | 8 (12.5%) | 4 (40%) | 3 (23%) | 7 (30%) | 87.5% |
| 3 | RENAL FAILURE | 8 (44%) | 17 (37%) | 25 (39%) | 3 (30%) | 7 (54%) | 10 (43%) | 40% |
| 4 | MODS | 8 (44%) | 17 (37%) | 25 (39%) | 7 (70%) | 6 (46%) | 13(56.5%) | 52.5% |

ARDS- Acute respiratory distress syndrome, MODS- multi organ dysfunction syndrome

## DISCUSSION

Influenza viruses are constantly changing either via.- **a) Antigenic drift-** Small changes in the genes that occur continually over time & produce antigenically similar viruses that can be recognized by immune system exposed to a similar virus. But as these small genetic changes accumulate over time, they result in viruses that are antigenically different & thus, may not be recognized by the immune system. This is the reason why people can get the flu more than one time & why the flu vaccine composition must be reviewed each year.

**b) Antigenic shift-** Abrupt, major change in the influenza A viruses that result in new hemagglutinin &/or new hemagglutinin & neuraminidase proteins. Most people have little or no protection against the new virus.[**3**]

In our study, female were found to be affected more than males (Male/female=0.39). In study by *Manoj et al* [7], male/female ratio was 0.51 while no gender predisposition was found in studies by *Jayadeva B et al* [**4**] & *Alavi SM et al* [**6**]. No difference was found with respect to mean age in both sexes. Similar results for age distribution were found by *Manoj et al* [**7**]. Though mortality group was dominated by female; percentage mortality in a particular sex group was seen more in positive male patients (55.5%) as compared to positive female patients (28%).

Mortality was highest among patients with a **duration of stay** between 1 to 10 days (69.6%) while it was least for>10 days stay (8.7%) suggesting that if phase of acute complications is managed aggressively, long term prognosis improves with treatment. Patients brought in critical conditions died within 1 day (21.7%) of hospitalization. This signifies the importance of early admission as well as detecting and managing complications through intensive care unit at the earliest.

H1N1 cases occurred mainly in-January to April 2015 (50 cases) & from August to October 2015 (14 cases). 3 major outbreaks of Swine flu were observed in India during the period of pandemic of 2009-2010- September 2009, December 2009 & August 2010.[**2**]

Common symptoms in study by *Gelotar Prakash et al* [**5**] were cough (100%) f/by fever (96.46%), sore throat (80.53%), breathlessness (72.56%) & nasal catarrh (39.82%). In *Alavi SM et al* [**6**] study, the most prevalent symptoms were: fever (96%), cough (86.6%) & sputum production (21%) patients. Other clinical findings were- lower respiratory symptoms, gastrointestinal symptoms & flu-like symptoms. In our study, cough (100%) with or without expectoration (54.7%), fever (92%) & dyspnoea (75%) were major presenting symptoms. Less common symptoms- myalgia (58%), sore throat (37.5%), rhinorrhea (28%), headache (17%) & joint pain (15.6%). **Unusual symptoms** were found in few patient-altered sensorium (12.5%), hemoptysis, abdominal pain and vomiting. Of these- **fever, cough and dyspnoea** were present with all patients under mortality group.

In study by *Puvanalingam A et al* [**8**] Bronchial asthma & TB were found to be risk factors. Seizure disorder was reported in 3%, cardiac lesion in 2% and immunosuppressive conditions in 1% of the total cases. In study by *Asmita A. Mehta et al* [**9**], DM was the most common co - existing medical condition, f/b CKD, CVA, seizure, malignancy & pregnancy. In our study, anaemia and DM were most common co-existing conditions followed in descending order by hypertension (15.6%), COPD (7.8%), hypothyroidism (6.25%), seizure disorder (3.12%), &pregnant women (3.12%). Infrequent associations were found with IHD/cor pulmonale/ hydropneumothorax/valvular heart disease / TB /CKD/chronic liver disease/ CVA/ postpartum female/malignancy (Stomach Carcinoma). 16 (69.5%) out of 23 patients who died had some co-existing illness of which DM was associated with 9 patients, Anaemia with 8 & Hypertension with 7 patients. No case was found with co-existing bronchial asthma/hyperthyroidism/ HIV /Hepatitis B.

Examination findings revealed tachycardia & tachypnea. Cyanosis was seen less commonly (6.25%). JVP & Blood pressure were normal. Bronchial breathing was found in 40-60% of patients suggesting underlying lung consolidation. Bilateral lung crepitations were found in 68% of total cases & in 100% of 23 cases under mortality group.
Cases were complicated by ARDS, encephalopathy, renal failure and MODS. Of 23 patients who died, 18 (78%) developed some complication. Of these ARDS and encephalopathy were found to carry higher mortality.

**LIMITATIONS-**Our study is based on H1N1 positive patients admitted in our hospital (NSCB Medical College Jabalpur) and may not reflect the actual clinical profile of the disease from the entire region of Madhya Pradesh.

## CONCLUSION

It is difficult to predict strict seasonal variability and age & sex predisposition in Swine flu outbreaks. Good clinical history & examination findings in presence of co-existing illnesses can help in suspecting Swine Flu in early stages at primary health care setups. Timely referral and early detection & aggressive management of acute complications can improve prognosis. Co-existing illnesses must be taken special care of while suspecting an outbreak of Swine flu in the community. Above all, community education & timely immunization, especially to those who carry high risk co-existing illness, must be emphasized.

More studies with larger sample sizes are required to predict efficacy of conventional clinical methods in detecting & predicting course of Swine flu in humans.

**CONFLICT OF INTEREST** – None.

## ABBREVIATIONS

1. JVP- Jugular venous pressure
2. COPD- Chronic obstructive pulmonary disease
3. MODS- Multi organ dysfunction syndrome
4. ARDS- Acute respiratory distress syndrome
5. Avg.- average
6. CKD- chronic kidney disease
7. SIV- Swine influenza virus
8. &- and

9. CVA- Cerebrovascular accident
10. HIV- Human Immunodeficiency virus
11. SBP- Systolic blood pressure
12. DBP- Diastolic blood pressure
13. Via.- through
14. f/by- followed by
15. TB- Tuberculosis
16. IHD- Ischemic heart disease
17. DM- Diabetes Mellitus

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