

Cross Sectional Descriptive Study of Fatal Cases of Category C RTPCR Proven H1N1 at Tertiary Care Centre from January 2015 to December 2015

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ABSTRACT

Introduction: After 2010, pdm H1N1 reappeared in several northern and western states of the country during the winter month of 2012-2013. The presently ongoing resurgence since December 2014 however appears to be worse than previous one. Research aimed to study the clinical profile, premorbid conditions and radiological features of fatal cases of category C RTPCR proven H1N1.

Material and Methods: We have retrospectively selected fatal cases of category C RTPCR proven H1N1 admitted from January 2015 to December 2015. Total 33 fatal cases were taken from our Tertiary Care Centre hospital records. They were categorized as per recent guidelines. Clinical examination, premorbid conditions and radiological features were studied in detail. Statistical analysis was done by 'R' software test SPSS 20 for equality of proportion.

Results: 33 fatal (death) cases were studied. 17 males (51.5%) and 16 females (48.5%) were affected. Mean age was 50 years and 40 years for males and females respectively. Common symptoms were fever 30 (90.9%), cough 29 (87.8%), breathlessness 32 (96.9%). Signs were Tachypnoea 33 (100%), crepts 33 (100%), rhonchi 32 (96.9%). Radiologically Reticulonodular shadows 15 (45.4%), multizonal 7 (21.2%), interstitial pattern 5 (15.15%) were seen. 9 (27.3%) cases had two risk factors, 15 (45%) had one risk factor.

Conclusion: In our current study young to middle age group was commonly affected. They had premorbid conditions and had multizonal and reticulonodular shadows on chest X-rays. The cause of fatality was late referral and start of tamiflu was late in these cases. As our sample size is limited so it is very difficult to conclude anything strong on such a small data.

Keywords: Fatal Cases, C RTPCR, H1N1

INTRODUCTION

The latest pandemic due to influenza A (H1N1) 09 (pdm H1N1) began in May 2009 spread to all over the world and became global by July 11, 2009.¹ On August 2010 the pandemic was declared to be an end with more than 18,449 deaths reported worldwide by the end of the month.² The signature of influenza epidemic is usually expressed in the form of excess rate of pneumonia progression to acute respiratory failure with resultant mortality and influenza associated hospitalization.³ The current analysis of the flu toll in India reveals that the economically productive age group (30-60 years) is the most affected with pregnancy, diabetes, hypertension and obesity were common comorbidities.³ Ministry of health and family welfare seasonal influenza A (H1N1) (Revised on 11/2/2015) Guidelines as follows.

Category A – Patients with mild fever plus cough, sore throat with or without bodyache, diarrhoea and vomiting,

No testing/ No oseltamivir

Treat symptomatically

Home isolation, Reassess after 48hrs.

Category B1- Category A Plus high grade fever and sore throat.

Home isolation, may need oseltamivir,

No testing required.

Category B2- Category A + high risk condition like-

Young children, Pregnant ladies, Age > 65 yrs. or older, COPD, IHD, liver and kidney diseases, blood disorder, DM, CVA, Cancer, HIV/AIDS, Patients on immune suppressive like steroids – home isolation,

Need oseltamivir,

No testing of broad spectrum antibiotics.

Category C- Category A+B

Dyspnoea, chest pain, drowsiness, hypotension, hemoptysis, cyanosis, children with somnolence, high and persistent fever, inability to feed well, convulsions, worsening of underlying chronic conditions.

Immediate hospitalization, Start Oseltamivir, send throat swab.

We have studied Category C (H1N1) Cases who died in our institute retrospectively from hospital records in special reference to clinical profile, premorbid conditions, radiological features and complications associated with H1N1.

MATERIAL AND METHODS

Available hospital records were retrospectively reviewed for category C (H1N1 RTPCR proven) who died in our institute from January 2015 to December 2015 - Rajarshi Chhatrapati Shahu Maharaj Government Medical College,

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CPR Hospital. The study had ethical clearance from the Institutional ethical committee. All fatal cases from category C (RTPCR) proven H1N1 were studied. Their clinical profiles, premorbid conditions and their radiological features. This is Cross-sectional Descriptive Observational study using universal sampling 'R' software test SPSS 20 for equality of proportion.

Inclusion criteria were Category C as per recent guidelines and those who died of H1N1 proven by RTPCR methods.¹

Exclusion criteria:

1. Category B2 not taken who have been discharged after treatment with oseltamivir.
2. Age <18yrs. were excluded. Informed consent was not required as they were studied retrospectively from the hospital records and no intervention was done.

Data collection

The following clinical data were collected from available hospital records, demographic characteristics on admission including age gender duration of symptoms, signs, comorbid illnesses, clinical findings and radiologic abnormalities.

Diagnosis of H1N1 done by RTPCR method done at NIV laboratory at Pune. Chest X-ray was done in portal machine of Adonis of 100mA capacity. The chest radiographs were reviewed by two experienced radiologist who were blinded to each other's reports who showed excellent (95%) agreement. Ethical review committee approval was taken and was approved by RCSM GMC CPR Hospital ethical committee.

STATISTICAL ANALYSIS

All analysis were carried out utilizing universal sampling 'R' software test SPSS 20 for equality for proportion.

RESULTS

Total 33 fatal (who died) cases were retrospectively selected from our available hospital records analysed from January 2015 to December 2015. 17 (51.5%) were males and 16 (48.5%) females were affected. Mean age in males is 50.5 years and 40 years for females. p value is <0.0497 i.e. <0.05. Therefore proportion of male deaths is greater than female deaths as shown in Table-1.

Common symptoms were fever in 30 (90.9%), cough 29 (87.8%), breathlessness 32 (96.9%), hemoptysis 4 (12.12%), vomiting 4 (12.12%), diarrhoea 3 (9%). Common signs were tachypnoea 33 (100%), hypotension 5 (15%), crepts 33 (100%), rhonchi 32 (96.9%) as shown in Table-2.

Premorbid condition- Hypertension and diabetes 3 (9.09%), CVA and Hypertension 2 (6.06%), ASD+AF 2 (6.06%), Pulmonary TB 4 (12.12%), pregnancy 3 (9.09%), HIV 2 (6.06%), IHD and HT 2 (6.06%), Hypertension 3 (9.09%), DM 3 (9.09%). 9 (27.2%) had more than one risk factors. 15 (45.4%) had one risk factors. 11 patients were healthy and no risk factors as shown in Table-4.

Radiologically, both lower zones were affected in 2 (6%), multizonal 7 (21.2%). Reticulonodular pattern 15 (45.4%), interstitial 5 (15.15%) old TB and multizonal involvement is 4 (12.12%). So in our study we found multizonal involvement and reticulonodular shadows were common amongst the

| Age | Male | % | Female | % |
|--------|------|-------|--------|-------|
| 20-40 | 6 | 18.18 | 10 | 30.3 |
| 41-61 | 6 | 18.18 | 4 | 12.12 |
| 61-80 | 3 | 9 | 2 | 6.06 |
| 81-100 | 2 | 6.06 | 0 | - |
| Total | 17 | 51.5 | 16 | 48.5 |

Table-1: Age group in death cases N-33

| Symptoms and signs | Number of cases | Percentage |
|--------------------|-----------------|------------|
| Fever | 30 | 90.9 |
| Cough | 29 | 87.87 |
| Breathlessness | 32 | 96.9 |
| Hemoptysis | 4 | 12.12 |
| Vomiting | 4 | 12.12 |
| Diarrhoea | 3 | 9 |
| Tachypnoea | 33 | 100 |
| Hypotension | 5 | 15 |
| Crepts | 33 | 100 |
| Rhonchi | 32 | 96.9 |

Table-2: Symptoms and signs

| | Number of patient | Percentage |
|---------------------|-------------------|------------|
| Both lower zones | 2 | 6 |
| Multizonal | 7 | 21.2 |
| Reticulonodular | 15 | 45.4 |
| Interstitial | 5 | 15.15 |
| Old TB + Multizonal | 4 | 12.12 |

Table-3: Radiological findings

| Premorbid condition | Number of condition | Percentage |
|---------------------------------|---------------------|------------|
| Hypertension+ Diabetes mellitus | 3 | 9.09 |
| CVA + Hypertension | 2 | 6.06 |
| ASD + AF | 2 | 6.06 |
| Pulmonary TB | 4 | 12.12 |
| Pregnancy | 3 | 9.09 |
| HIV | 2 | 6.06 |
| IHD + Hypertension | 2 | 6.06 |
| Hypertension | 3 | 9.09 |
| Diabetes mellitus | 3 | 9.09 |

Table-4: Premorbid conditions

fatal cases studied as shown in Table-3.

15 cases (45%) died within 48 hours of admission. 11 (33%) died within a week of admission. 7 (21%) died after 1-2 weeks of admission. The start up of oseltamivir was late in the ones who died within 24-48 hours of admission. Majority cases 45.4% had reticulonodular pattern and multizonal involvement who succumbed early within 24-48 hours of admission. The complications were sepsis with multi-organ failure which stayed for more than a week and also had acute kidney injury and hypotension. All were treated with invasive volume control ventilation with PEEP.

DISCUSSION

Seasonal Influenza is an acute respiratory illness that occurs particularly during the winter months.^{4,5} The pandemic started in India in the month of August 2009 and the index cases

were reported from Pune. This epidemic was notoriously seen to affect the younger population in the age group of 15-40yrs. In our study the mean age group is 50 years in males and 40 years in females. similar to Raman Sharma et al² and RT Borse et al⁴ who showed young to middle aged persons were affected due to H1N1 influenz., Common symptoms were fever, cough, sore throat, breathlessness. Common signs were tachypnoea, crepts, rhonchi. All matches with the previous studies by RT Borse et al⁴, A. Puvalingam et al⁵ and RT Borse et al.⁶

Premorbid conditions- Hypertension, Diabetes mellitus, HIV, Pulmonary TB, IHD, cancer, CVA, pregnancy were present in our studies contributing to death in these cases matches the studies of RT Borse et al⁴, A. Puvalingam et al⁵ Radiologically, our death cases had reticulonodular shadows with multizonal involvement which is similar to previous studies.⁶⁻¹⁰ The fatal cases in our study died within 24-48hrs. of admission as they were referred late to our institute and the oseltamivir had been started very late. 33% cases referred after a week of illness succumbed to death within a week. All patients were on invasive mechanical ventilation and PEEP was given. Some cases had complications like acute kidney injury and septicaemia with multi-organ failure with hypotension.

CONCLUSION

Middle aged was commonly affected. Common comorbidities were Hypertension, Diabetes mellitus, Pregnancy, Pulmonary tuberculosis, IHD, Cancer and HIV. Common symptoms and signs were fever, cough, sore throat, breathlessness, tachypnoea, crepts and rhonchi in our study. Radiological features were reticulonodular shadows and multizonal involvement. 45.45% died within 24-48hrs. of admission. All these findings match with previous studies. As our study has small sample size and is retrospective nature, it limits us to comment. Still in conclusion, annual vaccination of present strain of H1N1 for high risk category would help these young to middle aged individuals.

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