Clinical-Epidemiological Profile of Influenza A H1N1 Cases at a Tertiary Care Institute of Western India.

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ABSTRACT   In last few years, novel influenza A (H1N1) cases have created a lot of panic and concern in health and public sector. There are very few studies in the literature depicting its epidemiological profile in context to indian sub continent. A retrospective descriptive study was performed in 277 H1N1 positive category C cases from August 2012 to August 2015 admitted in HINI isolation wards of G. G. Hospital. From the analysis of data it was found that the disease morbidity was maximum in middle age group (12 to 40 years), while the older ones had more mortality. Females had more mortality and the disease trend was found very grave in antenatal cases and cases having multiple co morbidities. Longer the lag period between the onset of first symptom to admission in isolation ward, worse was the outcome. More than half of the cases required ventilatory support in the form of invasive or non invasive ventilation.

INTRODUCTION

Influenza A (H1N1) is a subtype of influenza A virus which was responsible for pandemic in 2009 worldwide. It is an orthomyxovirus that contains the glycoprotein haemagglutinin and neuraminidase. This novel virus presented genetic characteristics that had not been previously identified in Influenza A in humans, swine or poultry [1, 2] .This novel virus spread had caused about 17,000 deaths by the start of 2010.

There are very few studies in the literature depicting its epidemiological profile in context to indian sub continent. This study aims at finding the various epidemiological trends and clinical profile of H1N1 cases at a tertiary care institute of western India.

MATERIAL AND METHODS

A retrospective descriptive study was performed in H1N1 positive category C cases from August 2012 to August 2015.Total 277 positive cases were studied. Data was analysed in terms of age distribution, sex distribution, case fatality ratio in different age groups, various clinical presentations, the lag period between the onset of first symptom to admission in the isolation ward, cases requiring ventilatory support, the outcome of the cases , and the mean duration of stay in hospital.

All suspected samples were subjected to RT-PCR at department of microbiology, Rajkot in accordance with the protocol from the US Centers for Disease Control and Prevention, as recommended by the WHO [3]. Persons suspected of being infected were investigated by taking two na-

so-pharyngeal swabs for detection of the virus by RT-PCR assay. Category B1 and B2 patients were offered home isolation and treatment according to the guidelines given by Ministry of Health and Family Welfare, Government of India [4]

All cases were treated with oral oseltamivir 75 mg bid, from the day of admission, in accordance with the WHO criteria [5].

Data were collected from a questionnaire that was used to record patient information and presentation, which was administered by the doctor on duty. Records of the Influenza A H1N1 screening center and isolation ward were also studied. Data were analyzed using Microsoft Excel Software.

RESULTS

From August 2012 to August 2015, 277 positive cases (including children <12 years) were studied, of which 62 cases succumbed to the disease. Case fatality ratio was found to be 22.38%.
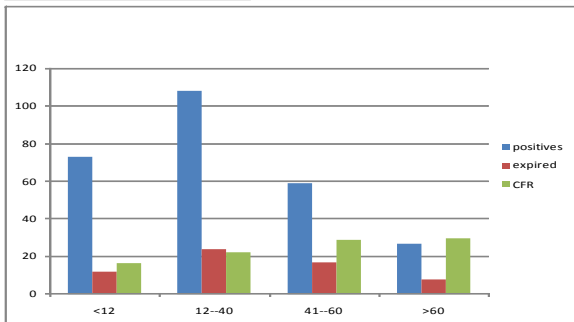
TABLE 1: AGE DISTRIBUTION AND CASE FATALITY RATIO

Maximum number of positive cases were in the age group of 12-40 years. (108 cases). Maximum mortality was found in the older age group, >60 years. (29.62%). (Table 1). Incidence of positive cases amongst males and females were almost equal but more mortality was seen in females (24.28%) compared to males (19.70%).Out of 140 positive female patients, 18 were in the antenatal period, out of whom 6 (33%) expired indicating more severe course of disease in pregnancy.
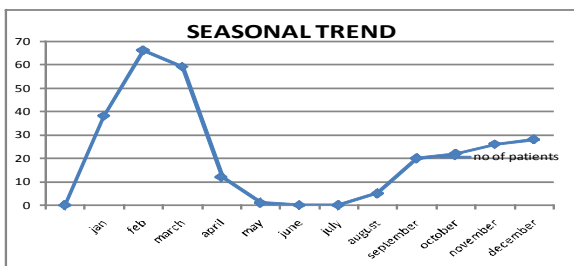

TABLE 2: SEASONAL TREND OF H1N1 CASES.

Majority of cases and deaths were in the month of February and March. (Table 2).Out of 277 positive cases, 167(60.28%) were urban and rest were rural.

It was observed that the mortality rate amongst cases who were admitted in H1N1 isolation ward within 4 days of symptom onset was 19.29%, compared to 27.35% amongst the cases who were admitted after 4 days indicating firmly the significance of early referral and treatment in H1N1 cases.
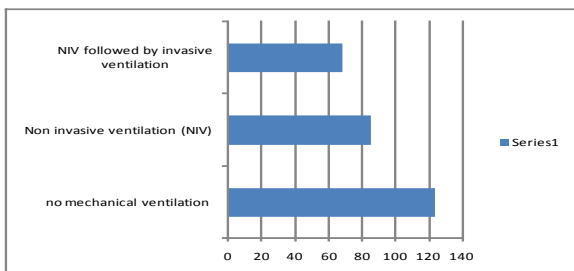

TABLE 3 : CASES REQUIRING MECHANICAL VENTILATION,

Out of 277 positive cases, 153 cases (55.23%) required ventilatory support including Non Invasive forms of ventilation, out of which 62 expired (40.53%).68 positive cases required invasive forms of ventilation out of which only 6 survived with survival rate of 8.82%.(Table 3)
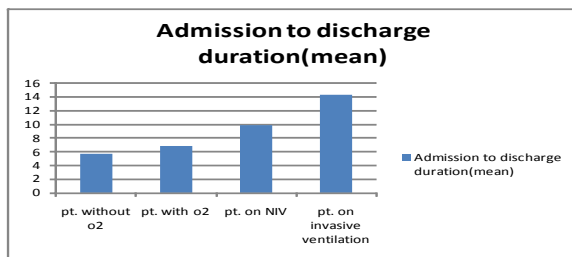

TABLE 4: MEAN DURATION OF HOSPITAL STAY.

Mean duration of stay of positive cases who had not required supplemental oxygen therapy was 5.7 days. It was 6.8 days for cases requiring supplemental oxygen. Cases who survived Non invasive ventilation had average duration of hospital stay of 9.8 days and those cases who eventually required invasive ventilation had average duration of stay 14.2 days. Admission to mean duration of expiry was 9.9 days.(Table 4)
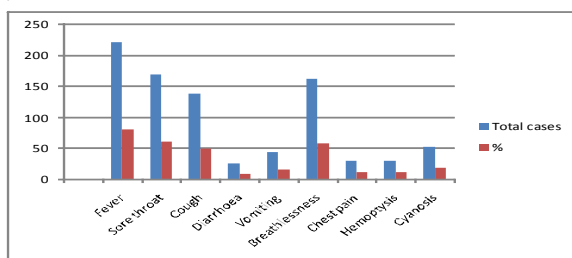

TABLE 5: COMMON PRESENTATIONS OF H1N1 CASES.

The common presenting symptoms in h1n1 positive cases were fever(80%) followed by sore throat(61%),breathlessness(59%),cough(49%),vomiting(15%),chestpain(10%),hemoptysis(10%),diarrhoea(9%). 22% cases had hypotension on presentation while 18% had cyanosis.(Table 5). On analysis of complete haemogram it was found that 61.37% cases had Total leukocyte count within normal limits, while 29.6% cases had neutrophillic leukocytosis and rest had leukopenia.

Individuals who had associated other co morbidities like diabetes, cardiovascular disease, liver disease, kidney disease, neurological disease accounted for 162 cases of the 277 positive cases (58.48%). Case fatality ratio in this group was 29.01 %(47 cases) which was higher compared to overall case fatality ratio of 22.38% of this study.

DISCUSSION

G G Hospital ,Jamnagar had cases from most of the western part of Gujarat namely Saurashtra region and Kutch region which may reflect the trend, morbidity, mortality of influenza A H1N1 in this part of India.

Age of patient varied from 4 months to 80 years, with an average age of 27.3 years. According to a study, the prevalence of Influenza A H1N1 in 2009 was greatest among children and young adults, although older patients and those with co-morbidities are more likely to experience worse clinical outcomes[6] Similarly, a study done in New Zealand concluded that, in 2009, Influenza A H1N1 predominantly affected young population with relative sparing of the elderly population[7] According to a study done in Queensland, a large number of cases were reported in the 10-19 years age group (28%), followed by the 20-29 years age group (26%).[8]

The most common symptoms with which patients presented were fever (80.14%), sore throat (61.37%), difficulty in breathing (58.38%), cough (49.37%). In a study done in mainland China, fever (81%), cough (40%) and sore throat (35%) were found to be most common symptoms in Influenza A H1N1[9] Fever (56%) was also reported to be the most common symptom, followed by cough (54%), sore throat (32%), rhinitis (17%) and difficulty in breathing (7%) in a study of the first 100 cases of Influenza A H1N1 in Saudi Arabia[10] In a study conducted at Chile, fever was the most common presentation (83%), followed by cough (72%), odynopahgia (54%), myalgia (48%) and dehydration (4%) [11]. Mortality was mostly seen in patients with hypotension, cyanosis, low spo2 on presentation, drowsiness on presentation and these patients eventually needed ventilatory support.

Although patients in this study comprised a sizeable proportion of cases from western Gujarat, the findings of this study need to be carefully extrapolated and cannot be generalized to a large population. This is one of the limitations of our study. Secondly, we restricted our study to only hospital; therefore, many cases of Influenza A H1N1 may have been missed. Not being a community-based study, we may not be able to calculate the exact measures of epidemiology. Thirdly, regional geographical conditions have not been accounted for, which may have a significant impact on prevalence and morbidity. There may be a small number of cases that may have been missed out, although every attempt was taken to include all the cases, but this figure would not have been significant.

CONCLUSION

On the basis of findings of this study, it can be hypothesized that younger ,urban individuals are more at risk of H1N1 infection, while the older, pregnant and individuals having multiple co morbidities are likely to suffer from a grave course. The survival rate drastically increases if any suspected case reaches or is referred early in the isolation ward.

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