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Original Article

Mode of presentation and disposition of suspected H1N1 patients in the Emergency Department, Pakistan

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ABSTRACT

OBJECTIVE

The purpose of the study is to review the clinical characteristics of patients suspected of swine flu and their disposition in the emergency department of a tertiary care hospital.

METHODOLOGY

Retrospective chart review of the patients suspected of swine flu presenting to the emergency department of Shifa International Hospital from January 2018 to February 2019 was done. The data was taken from infection control department and files of the patient were reviewed from medical record department. Frequency and percentages were calculated using SPSS version 23. Ethical approval was taken.

RESULTS

59 patients were enrolled in the study out of which 29 (49%) were positive for either H1N1, flu A or Flu B most of which were in the adult age group. The common presenting features were cough (96%), dyspnoea (75%), tachypnoea (76%) and fever (48%). Influenza A had the highest incidence (65%) among all cases. Eight patients were discharged from the emergency department whereas twenty-one patients were offered admission with five patients being admitted in the critical unit.

CONCLUSION

Cases of swine flu are reported every year across the country. Mortality rates are higher among the patients with a diagnosis delay. Further studies need to be done among different hospitals to get more precise data about the prevalence and early identification of swine flu.

KEYWORDS

Swine Flu, H1N1,Flu A, Flu B, Pakistan

INTRODUCTION

In April 2009 a new strain of influenza virus, A/H1N1, commonly referred to as "swine flu," started to spread in different countries across the globe. [1] According to a global study, although there were 18,500 laboratory-confirmed deaths from swine flu, more than 200,000 deaths were attributed to the swine flu pandemic. [2] One of the main threats associated with these organisms is that the frequency with which mutation occurs in their genetic material, resulting in different strains of viruses. In August 2009, first confirmed case was reported in Pakistan. [3] The first pandemic in the 21st century was caused by the H1N1 triple recombinant influenza a virus containing avian, swine and human gene segments. [1]

One of the many countries that are vulnerable to the influenza epidemic is Pakistan. Multiple eruptions in different parts of the country have been reported, notably in the provinces of Punjab and Sindh, with substantial deaths occurring due to the disease. [3] Given Pakistan's conditions as a developing country, lack of sanitation and ignorance of public health issues, it is not unreasonable to assume that the actual number of cases should be higher than the reported cases. There are many factors that make Pakistan extremely vulnerable to an epidemic in the future. The most obvious case refers to Pakistan, which has a large border with China and India. Both countries are with high population density, high pig density and a large number of reported cases. In addition, the most affected provinces in Pakistan, Punjab, and Sindh, are bordering the three most affected provinces of Rajasthan, Gujarat, and Punjab. [4]

H1N1, an orthomyxo virus, creates virions that vary in diameter (80-120nm), with an RNA genome. [5] The swine influenza genome consists of 8 different regions which are segmented and encode eleven different

proteins: Envelope proteins hem agglutinin (HA) and neuraminidase (NA), viral RNA polymerases which include PB2, PB1, PB1-F2, PA, and PB, matrix proteins M1 and M2, nonstructural proteins NS1 and NS2 (NEP), which are crucial for efficient pathogenesis and viral replication. [5]

In August 2009, first confirmed case was reported in Pakistan.[3] Since then, Pakistan gets its season of flu every year, which peaks in January and February and tapers in March. In 2015/16, the outbreak of swine flu in Pakistan was reported from Multan, Dera Ghazi Khan, and Punjab with increased mortality in subsequent years. [6] As there is a delay in diagnosis and lack of public health measures this puts a huge burden on the health care system. The purpose of the study is to review the clinical characteristics of patients suspected of swine flu and their disposition in emergency department of a tertiary care hospital.

METHODS

Retrospective chart review of the patients suspected of swine flu presenting to the emergency department of Shifa International Hospital from January 2018 to February 2019 was done. The data was taken from infection control department and files of the patient were reviewed from medical record department. All patients with suspicion of swine flu who were tested with Influenza A, B and H1N1 PCR presented in emergency department of Shifa International Hospital from January 2018 to February 2019 were included in the study. All data were entered and analyzed via SPSS version 23. Frequency and percentages were calculated using SPSS version 23. Ethical approval was taken.

RESULTS

During the study period, 59 patients were enrolled according to inclusion criteria. Out of 59, 36 were males (61%) and 23 were females (39%). Three patients were from pediatric age group, 51 adults and 5 geriatrics. Out of 59 suspected cases 29 patients (49%) were found to be positive for either H1N1, Flu A and Flu B in their sputum samples. Out of total of 29 patients who tested positive, 15 had H1N1 and Influenza A both positive (51%), 6 patients were positive for influenza A (21%), and 8 were positive for influenza B only (28%). Isolated H1N1 was not present in a single patient as shown in Figure 1.

Out of 29 diagnosed cases, the common presenting complaints were cough in 28 patients (96%), dyspnea was present in 21 patients (75%), 14 had fever (48%), and 14 had preceding flu-like symptoms (48%) (Fig. 2)

On examination 22 patients (76%) were tachypneic at the time of presentation and oxygen saturation was less than 94% in 16 patients (55%)

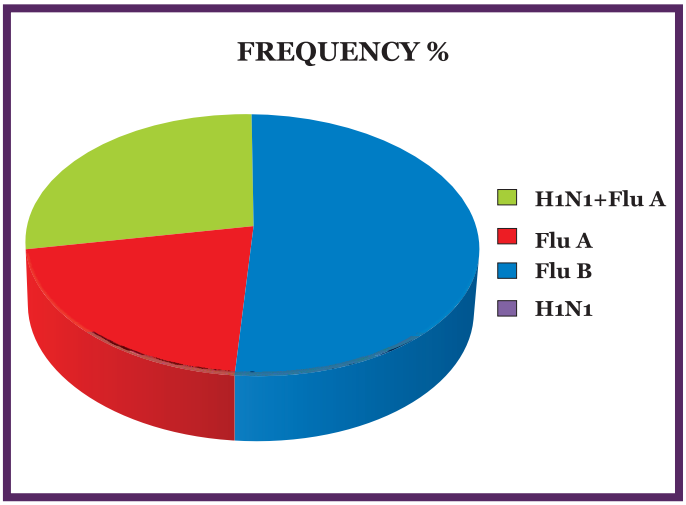

Figure 1: Frequency of H1N1, Influenzas A, and Influenza B

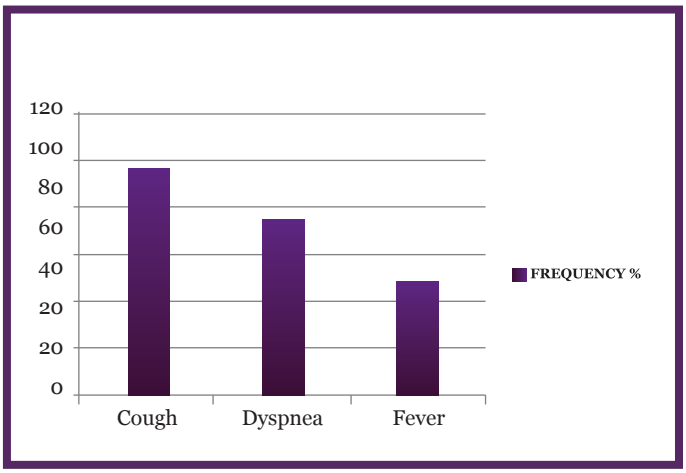

Figure 2: Common presenting symptoms

6 patients had a positive chest radiograph finding of bilateral infiltrates (21%) and 23 patients had a total leukocyte count within the normal range (79%), the CRP of 15 patients was less than 100

3 patients were admitted in medical step down, 2 in medical ICU, 7 on the floor, 5 patients left against medical advice due to personal reasons, 4 patients were referred due to non-availability of beds in the hospital and 8 patients were discharged safely from emergency department. These results are shown in Figure 3.

Out of 29 positive patients 16(55%) survived and were discharged, 4 (14%) died in hospital. 9 patients were lost to follow up. Shown in Figure 4.

DISCUSSION

In our study, a total of 59 patients presented with symptoms of lower respiratory tract infection and were

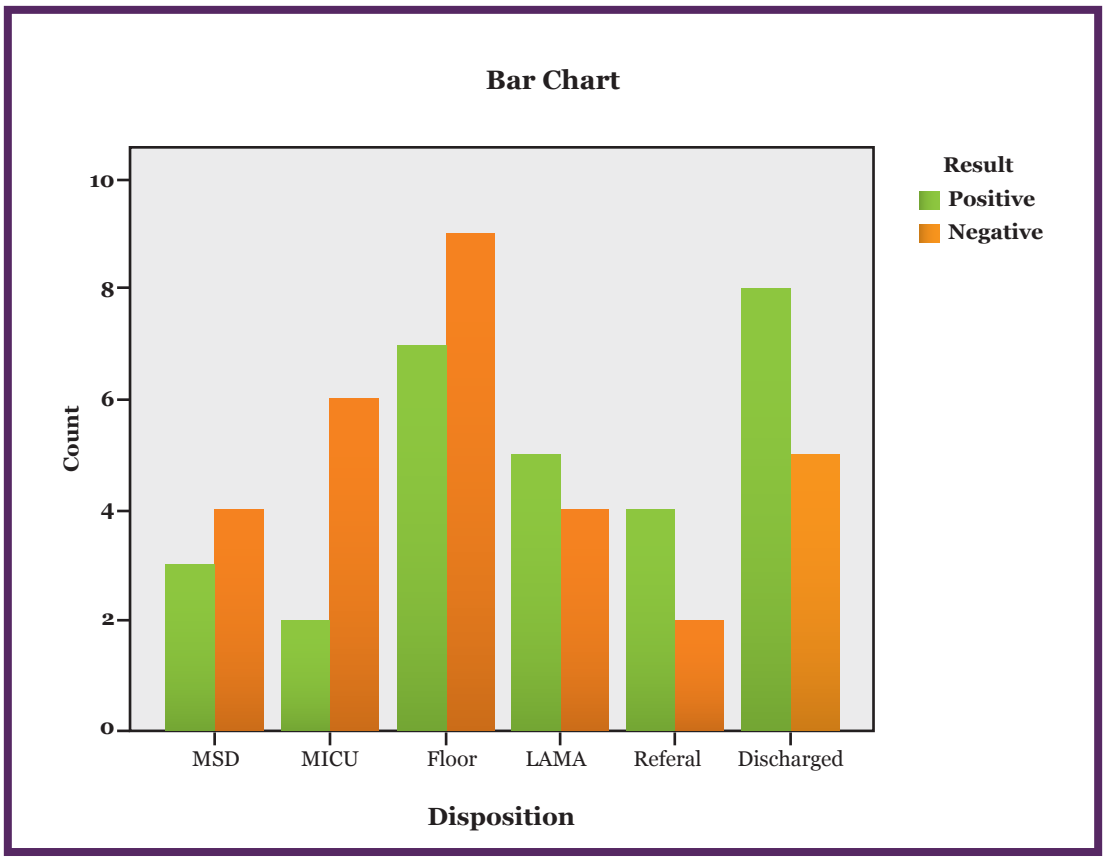

Figure 3: Disposition of positive cases

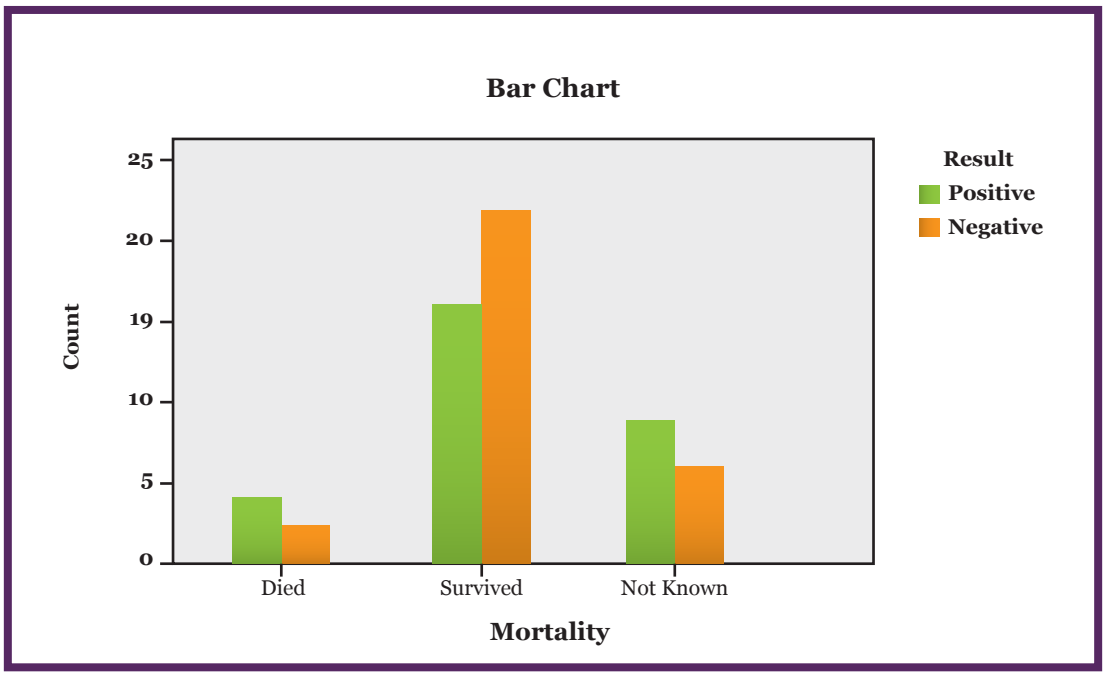

Figure 4: Mortality among positive cases

suspected for H1N1, influenza A and B, tested by PCR. 75% of positive patients were in adult age group. The most common presenting symptoms were cough (96%) followed by Dyspnea (75%) and fever (48%). These findings are consistent with a study conducted in India that revealed cough to be the most common symptom followed by fever, throat irritation and Dyspnea. [7] A study in Beijing concluded that the most common presentation of Influenza A was coughing predominantly. [8] As most of our patients have influenza A, this could be the reason for cough being the most common symptom.

In our study, 16 (55%) patients recovered and were discharged safely, 4 (14%) died and 9 patients could not be followed due to referral to another hospital or leaving against medical advice. The mortality rate was lower as compared to a cross-sectional Indian study (21%) carried out in Rajasthan where they showed that having a comorbid condition results in worse prognosis in swine flu. [9]

Important risk factors for worse prognosis are a history of travel, contact with infected patients, association with co-infections and previous comorbidities, and need for ventilator support. [7, 10] Mehta et al. showed that presence of lymphopenia and bilateral infiltrates on chest X-rays at presentation were independent risk factors for mechanical ventilation or death with pregnancy being a high-risk condition with worse outcomes [11] while another study showed that invasive ventilation was statistically significant in prediction of mortality. [12] An interesting study concluded that PaO_2/ FiO_2 ratio of equal to or less than 200 had an odds ratio of 12.3 in predicting mortality when adjusted for age and gender. [13] Khan et al. also identified hypoxia as an independent risk factor. [14]

CONCLUSION

All the cases of swine flu do not require hospital admissions or intensive care, rather patients can be discharged and managed at home. Common presenting complaints are cough, dyspnoea, and fever. Preceding flu-like symptoms can give an extra clue towards the diagnosis but if not present does not exclude the disease. Infective markers like Total leukocyte counts are low in most of the cases as it's a viral infection. The mortality rate is low with early recognition and treatment. However, multi-institutional studies with larger population sizes may lead to better understanding regarding epidemiology of swine flu outbreaks and help to plan measures to limit the infection in local community.

LIMITATIONS

A small sample size, single institutional study, and convenient sampling are some confines that limit its generalizability.

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