Profile of Novel Flu Patients Admitted in Two Government Hospitals in Bangalore

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RESEARCH

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Abstract

Background
During the spring of 2009, a pandemic of novel flu, popularly called swine flu, emerged in Mexico and spread globally. We describe the profile of the patients who were hospitalised with the flu in two large government hospitals in Bangalore. After warnings of flu outbreak, these two hospitals were identified initially for screening and treatment for novel flu.

Method
A retrospective review of clinical records is reported. Data including the common clinical features, underlying medical condition and treatment outcome of 112 patients admitted with novel flu to two government hospitals in Bangalore from June to November 15, was collected.

Results
61 (54.4%) of the patients were in the age group 16–35 years, 69 (61.6%) were males, 41 (36%) presented within two days of symptoms, 93 (83%) presented with fever, 81 (72.3%) presented with cough and 37 (33%) with breathlessness. The data suggests that 17% of the patients had history of travel to novel flu affected areas, 6.2% both travel and contact. For majority of patients, the duration of stay in the hospital was 4–6 days (51.7%), 12 (10.7%) had history of underlying co morbid conditions. In the study, 19 (16.9%) were treated with steroids, 31 (27.6%) were admitted to an ICU (intensive care unit) and 26 (23.2%) died all aged 16–35 years.

Conclusion
In our study, majority of the patients were 16–35 years old, presented to the hospital within two days with fever, cough and breathlessness as the predominant symptoms and less than half of them had history of travel or contact. Most of the patients recovered, and death was reported in 23.2% of the patients.

Key Words
Novel flu, Symptoms, Profile, Co morbid conditions

Background

Novel flu or swine flu or H1N1, as it is popularly known, is a new influenza caused by quadruple reassortment virus that has 2 genes from flu viruses circulating in pigs, in Europe and Asia, bird genes and human genes.[1]

The first case emerged in Mexico on April 15 2009, then it spread leading to a global pandemic and WHO raised the pandemic alert to phase 6 on June 11 2009.[2] In India, a total of 15411 cases have been reported of which 523 died. In Karnataka, a total of 1530 cases have been reported of which 118 died (as on 15th November).[3]

The information analysed by CDC (Center for Disease Control) supported the conclusion that novel H1N1 flu caused greater disease burden on people younger than 25 years than older people.[4] The symptoms are similar to seasonal flu although vomiting and diarrhoea have been reported more commonly with H1N1.[4] The number of deaths is also higher in 25–49 years of age.[4]

In India, initial surveillance was started at airports and then extended to community level. In order to make the testing facility more accessible at large and due to onset of flu season in the country, it was decided to revise the guidelines. Thus, persons presenting with flu-like symptoms were categorised into category A (patients with mild fever plus cough/sore throat with or without body ache, headache, diarrhoea and vomiting) category B (in addition to signs and symptoms of category A, if the patient has high-grade fever and severe sore throat or having one or more of the following high-risk conditions like children less than

5 years old, pregnant women, persons aged 65 years or older, patients with lung diseases, heart disease, liver disease, kidney disease, blood disorders, diabetes, neurological disorders, cancer and HIV/AIDS and patients on long-term cortisone therapy) and category C (in addition to the above signs and symptoms of categories A and B, if the patient has breathlessness, chest pain, drowsiness, fall in blood pressure, irritability among small children, refusal to accept feed, worsening of underlying chronic conditions).[5] Testing is done only for category C and pharmacological treatment given for categories B and C.[5]

Table 1. Age group and sex of the patients

Age in years	Male	Female	Total	Percent
0–15	10	9	19	17%
16–25	14	11	25	22.3%
26–35	25	11	36	32.1%
36–45	14	5	19	17%
46–55	3	5	8	7.1%
56–65	2	2	4	3.6%
> 65	1	Nil	1	0.9%
Total	69	43	112	100%

In order to find out the age-distribution common clinical features underlying medical condition and treatment outcome in patients admitted with novel flu, we decided to do a study of profile of the patients admitted with novel flu in two hospitals in Bangalore from June till November 15 2009. By studying the profile of the patients, we will come to know the common age group, symptoms, underlying medical condition and treatment outcome, thus helping us in a better management of the future cases.

Method
The study was conducted in the two large government hospitals of Bangalore, which are attached to the teaching institute and mainly cater to the people from lower socioeconomic groups, however, during the outbreak of novel flu these hospitals which provided screening and treatment for all irrespective of their socioeconomic status. After few cases of novel flu were reported, these two hospitals were identified as the first for screening and treatment of novel flu. After obtaining permission from the directors of these two institutions, information regarding common clinical features, underlying medical condition and treatment outcome of the patients admitted with novel flu in the two hospitals from June till November 15 was collected .The study was conducted from June till November 15   as this was the time when largest number of patients were admitted to the hospitals, subsequently a change in guidelines for admission recommended admission only for seriously ill patients (category C) which led to reduced admission rate. A total of 112 patients were included in the study and data was collected by record analysis using a pretested questionnaire. It is a hospital-based retrospective study. Data was collected from June to November 2009.

Results
The data indicate that out of 112 patients 32.1% of the admitted patients were in the age group of 26–35 years, 17% less than 15 years and 3.6% of the patients were in the age group of 56–65 years. 61.6% were males and 38.4% were females (refer to Table 1).

The study revealed that 38.6% of the patients presented after two days of symptoms and 27.7% after more than six days (refer to Table 2). 83% presented with fever, 72.3% presented with cough, 33.03% with breathlessness and 18.75% with sore throat (refer to Table 3).

Table 2. Duration of complaints before reporting to the hospital

Days	Number	Percent
1–2	41	36.8%
3–4	22	19.7%
5–6	18	16.8%
> 6	31	27.7%
Total	112	100%

Table 3. Presenting symptoms

Symptoms and signs	Number	Percent
Fever	93	83%
Cough	81	72.3%
Sore throat	21	18.75%
Running nose	18	16.1%
Breathlessness	37	33%
Chest pain	10	8.9%
Haemoptysis	4	3.5%

The study revealed that 17% of the patients had history of travel to novel flu-affected areas, 6.3% history of contact with novel flu cases and 6.3% had history of both travel and contact. While in the patients admitted before mid September, 31.7% of the patients had history of travel to novel flu-affected areas, 11.7% had history of contact with novel flu cases and 11.7% had both travel and contact history, thus demonstrating the presence of disease in the community (history of contact patients had been in contact with a case of novel flu in the past seven days, history of travel to areas where there are one or more confirmed novel flu cases, in the past seven days[6]) (refer to Table 4).

Table 4. Contact and travel history		
	Number	Percent
History of contact	7	6.3%
History of travel abroad	19	16.9%
History of contact and travel abroad	7	6.3%
No history of contact and travel	79	70.5%
Total	112	100%

The study revealed that for majority of patients (51.7%), the duration of stay in the hospital was 4–6 days (refer to Table 5).

Table 5. Duration of stay in the hospital		
Days	Number of patients	Percent
1–3	31	27.7%
4–6	58	51.7%
7–10	16	14.3%
>10	7	6.2%
Total	112	100%

12 patients (10.7%) had history of underlying co morbid conditions like diabetes mellitus, coronary heart disease, hypertension, chronic obstructive pulmonary disease (COPD), HIV, etc (refer to Table 6). Two patients were known smokers and three were smokers and alcoholic. 17 patients (15.2%) had been treated earlier in other hospitals for the same complaints. 43.3% of the patients had pharyngeal congestion, 13.3% had abnormal chest finding and 0.05% had cyanosis. All the patients were treated with oseltamivir, antibiotics and symptomatic management, 19 patients (16.9%) were treated with steroids and 31 (27.6%) were admitted in ICU (intensive care unit).

Table 6. Presence of other co morbid conditions		
Co morbid conditions present	Number	Percent
Yes	12	10.7%
No	100	89.3%
Total	112	100%

Of the 112 patients admitted, 26 patients died (23.2%) most of them were in the age group of 16–35 years (refer to Tables 7 and 8). All the patients developed acute respiratory distress syndrome (ARDS) followed by multiple organ dysfunction syndrome (MODS) and succumbed to death. The remaining fifty six patients who recovered were admitted for a mean duration of five days and treated with oseltamivir, antibiotics and symptomatic management.

Table 7. Outcome of admitted patients		
Outcome	Number	Percent
Recovered	86	76.8%
Death	26	23.2%
Total	112	100%

Table 8. Outcome in various age groups		
Age in years	Recovered	Death
0–15	19(100%)	nil
16–25	17(65.4%)	9(34.6%)
26–35	28(75.7%)	9(24.3%)
36–45	15(79%)	4(21%)
46–55	5(62.5%)	3(37.5%)
55–65	2(50%)	2(50%)
Total	86(76.8%)	26(23.2%)

Discussion

These data indicate that most of the patients were in the age group of 16–35 years and the median age was 27 years. While in a study done in California hospitalization rates were highest for young adults age 18 to 29 and lower for older people and the median age was 27 years.[7] The data demonstrate that 17% of the patients were less than 15 years while a study in Mexico showed that 41.9% of patients were aged less than 15 years.[8] This is in contrast to peak periods of seasonal influenza, when influenza hospitalisations are more common among persons 65 years of age or older and those under the age of 5 years.[9] The study revealed that almost half the hospitalisations involved persons under the age of 35 years and only 0.9% were more than 55 years of age. Possible explanations for this phenomenon include the fact that children are more likely to be exposed in schools, the young have a greater susceptibility to the virus (as compared with persons > 60 years of age) and young febrile patients are more likely to be tested, since older adults with influenza often do not have fever.[10] In the study, 10.7% had history of underlying co morbid conditions while a study in California showed that 64% had underlying medical conditions.[11] The most common symptoms in the study patients were fever, cough and breathlessness, this is similar to the findings of a study done in California.[11] The study revealed that 19 patients (16.9%) were treated with steroids, similar study done in the United States showed that 36% received such drugs.[10] The study revealed that 31 patients (27.6%) admitted in ICU (intensive care unit) and were in age group of 16–35 years, this is similar to findings of a study done in the United States, which revealed that 25% of the patients were admitted to an ICU and the median age of those who were admitted to an ICU was 29 years.[10]

Of 112 patients included in this study 26 (23.2%) died while in a study done in California of the 1088 hospitalisations, 118 died, which equates to a mortality of 11 percent.[7] The higher number of deaths reported in the study may be due to the change in criteria for admission which recommended admission for only seriously ill patients. The study revealed that for patients older than 50 years, the mortality rate was 19.1% which is similar to a study in California which showed that for people age 50 and older, the fatality rate was as high as 20 percent.[7] This study revealed that the most common cause of death was acute respiratory distress syndrome which is similar to a study done in California, where the most common causes of death were viral pneumonia and acute respiratory distress syndrome, which

are complications of influenza.[7] Most of the patients who died were in the age group of 16–35 which is similar to the previous study which showed persons age 20–40 accounted for the bulk of the excess deaths.[12]

Conclusion

The study that demonstrated that novel flu (H1N1) infection-related critical illness predominantly affects young patients with few major co morbid conditions and is associated with severe hypoxemic respiratory failure, often requiring prolonged mechanical ventilation. Although serologic studies suggest that influenza A (H1N1) is a novel influenza strain with little protection afforded by seasonal influenza vaccination, adults older than 60 years appear to have some pre-existing immunity to this novel virus. Fever and respiratory symptoms were harbingers of disease in almost all cases. Most of the patients who died were more likely to have higher severity of illness at presentation and greater organ dysfunction.

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