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Study of Suspects / Probable Cases of H1N1 --- Under the Light of Swine Flu Epidemic 2015

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Abstract:
Background:The Influenza A H1N1 virus is a highly contagious pathogen which caused the 2009 influenza pandemic. *Early case detection and treatment as per WHO guidelines is necessary to reduce the spread, morbidity and mortality of both confirmed and suspects of H1N1 infection and itis the foundation of all efforts to understand and control influenza.*
Objectives:
1. *To study epidemiological profile of suspected cases of swineflu inrelation to outcome.*
2. *The purpose of this study was to find the proportion of confirmed swine flu "cases" among the total cases who were presented with acute respiratory illness during the epidemic of swineflu.*

Material and Methods: *This study was carried out in Sir Ronald Ross Institute of Tropical and Communicable Disease(SRRIT&CD), Hyderabad during Swineflu epidemic period of 3 months period (January 2015 to March2015).* The Epidemiological profiles of all suspects/ probable of H1N1 cases were analyzed with reference to age, sex and monthwise distribution,morbidity and also the outcome.*Information was collected using predesigned proforma from all "suspects" of swineflu admitted to isolation wards.*
Results: *Out of total 331 cases with acute respiratory illness, 85 (25.68%) were found to be positiveand were excluded from the study.Rest of 246(74.32%) suspects were included in this study. Maximum cases 118 (47.97%) reported between 21 – 40 years of age group with most of them being admitted in the month February2015 i.e. 118 (47.97%). The morbidity of disease is more in females compared to males. Out of 246 cases, 116 patients (47.15%) showed morbidity with the major complication being Bronchitis with bronchospasm followed by Unilateral and Bilateral Pneumonias and Koch's lesions. There were 56 cases of Bronchitis(22.76%), 38 cases of bilateral Pneumonia(15.44%) and 20 cases of unilateral Pneumonia(10.56%) and 2 cases of Koch's lesion(0.87%)*
Conclusion:*Early case detection can reduce the burden of disease of both confirmed as well as suspected cases, so the health system should be strengthened and early reporting should be encouraged through various health campaigns.* We carried out a descriptive study, in order to study the epidemiology and establish the magnitude and severity of acute respiratory illness which mimic swineflu in our community in the recent 2015 epidemic.
Key words:*H1N1, suspected cases, Bronchitis, pneumonia.*

I. Introduction

Influenza pandemics are caused by new influenza virus like H1N1 that were recently adapted to humans. The influenza virusis notable for its unique ability to cause recurrent epidemics and global pandemics.[1,2-4] World Health Organization [WHO] has raised the level of Influenza pandemic alert. As per WHO, India has experienced the start of 2009 Influenza pandemic. The magnitude of the problem of Swineflu is

ever increasing in India. The qualitatively and quantitatively effective case detection and treatment as per WHO guidelines is necessary to reduce the mortality from Influenza A H1N1 virus. The present study was carried out to find out the proportion of suspected swine flu cases in relation to total cases acute respiratory illnessand also to study the epidemiological profile and the various correlates affecting the outcome of the swine flu cases.

II. Material & Methods

Study Area: The present study was carried out at Sir Ronald Ross Institute of Tropical and Communicable Diseases(SRRIT&CD), Nallakunta, Hyderabad screening, diagnosis and management of suspected cases of H1N1 from 1st January'2015 to 31stMarch'2015.

Study Sample: Each patient visiting swine flu ward, who was suspected clinically to be H1N1 positive was placed in one of three categories according to the guidelines provided by Ministry of Health and Family welfare in August, 2009.Among all suspects and probable of Influenza A HINI swine flu admitted to isolation wards of SRRIT&CD, Hyderabad.A complete data of all the patients from swine flu wards were maintained from the month of January 2015 onwards. Standard case definitions were used for the categorization of influenza A patients as per clinical features. The data obtained was fed up in Microsoft Excel sheet and was analysed.Data was analysed according to age, gender, location, duration of admission and the final outcome.

Exclusion Criteria: All confirmed cases (positive for human H1N1 virus) of swineflu were excluded.

III. Results

In this period 331 patients presented with acute respiratory illness were tested, of which 85 (25.6 %) were found to be H1N1 positive. A total of 246suspects and 85 confirmed cases were admitted and treated with specific and supportive therapy.

As can be seen in Table 1 and graph 1, total 331cases were admitted in swine flu isolation wards from January 2015 to March' 2015. Out of which, 85 (25.6%) were positivefor swine H1 and 246 (74.32%) were negative forswine H1N1. Table 2 and graph 2 shows month wise distribution of confirmed (85 cases) and suspects and probable cases (246 cases). Most of the suspected cases were admitted in the month February'2015 i.e. 118 (47.97%), followed by January 108 (43.9%) and least number of cases i.e. 20 (8.13%) were admitted in the month of March'2015. As shown in Table 3 and graph 3, the maximum number of cases 142 (57.72%) were females. Patient in the21-40 year age group accounted for 118 (796%) and patients in the 0- 20 years and 41-60 years age group comprised 54 (21.95%) of the total cases each (Table 3). The least number of cases were seen in the age group > 60 years, 20 cases (8.13%)

Table 4 and graph 4 shows that, out of 104 male patients, 58 (23.57%) were discharged while 46 (18.69%) developed complications like bronchitis and pneumonitis. Similarly, out of 142 female patients, 72 (29.26%) got cured while 70 (28.45%) developed similar complications. Morbidity was more in females as compared to males.

As shown in table 5 and graph 5, 116out of 246 patients(47.15%) showed high morbidity with the major complication being Bronchitis followed by Unilateral and Bilateral Pneumonias and Koch's lesions as shown in table 5 and graph 5. There were 56 cases of Bronchitis(22.76%), 38 cases of bilateral Pneumonia(15.44%) and 20 cases of unilateral Pneumonia(10.56%) and 2 cases of Koch's lesion(0.87%)

Table 1: Distribution of cases (n=331)

Swineflu cases	Confirmed	Suspects/ probable	Total
Number of cases	85	246	331
Percentage	25.68%	74.32%	100.00%

Graph 1: Distribution of cases (n=331)

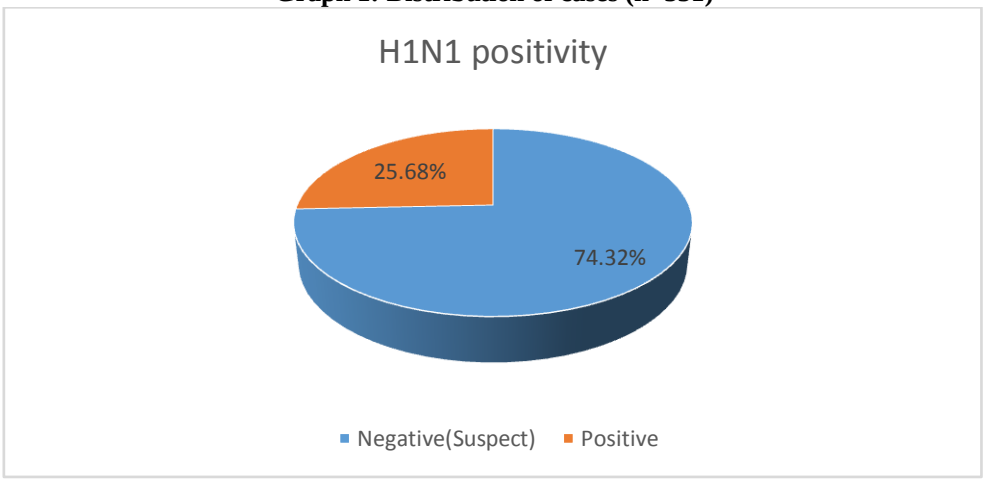


Table 2: Month wise distribution of positive and negative cases (n=331)

Month	Confirmed	Suspects/ Probable	Total
January	30(9.06%)	108(32.63%)	138(41.7%)
February	48(14.5%)	118(35.65%)	166(50.15%)
March	7(2.11%)	20(6.04%)	27(8.157%)
Total	85	246	331

Graph 2: Month wise distribution of positive and negative cases(n=331)

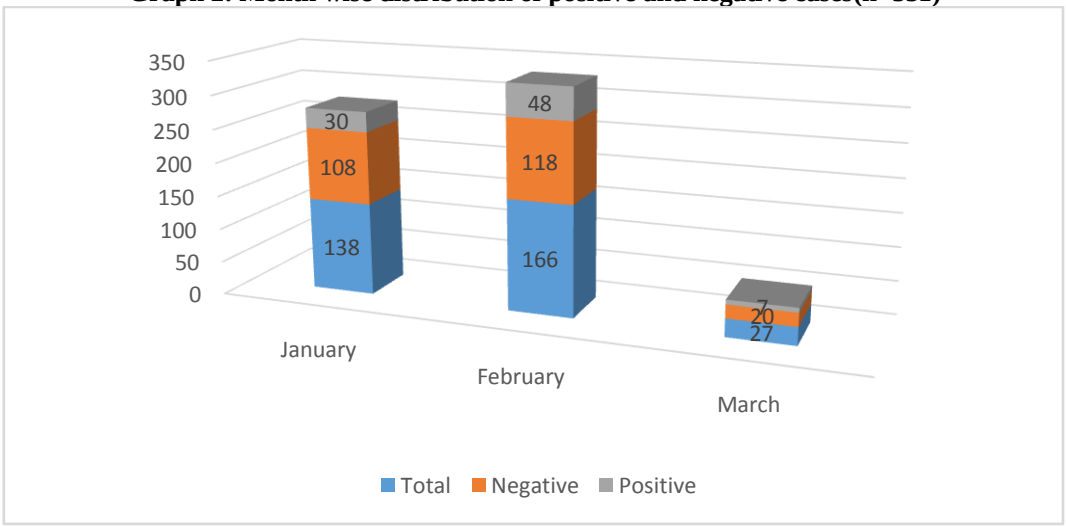


Table 3: Age and Genderwise distribution of suspects and probable cases (n= 246)

Age group in years	Male	Female	Total
0-20	30(12.12%)	24(9.75%)	54(21.95%)
21-40	36(14.63%)	82(33.33%)	118(47.96%)
41-60	30(12.12%)	24(9.75%)	54(21.95%)
>60	08(3.25%)	12(4.9%)	20(8.13%)
Total	104(42.3%)	142(57.7%)	246(100%)

Graph 3: Age and Gender wise distribution of cases(n= 246)

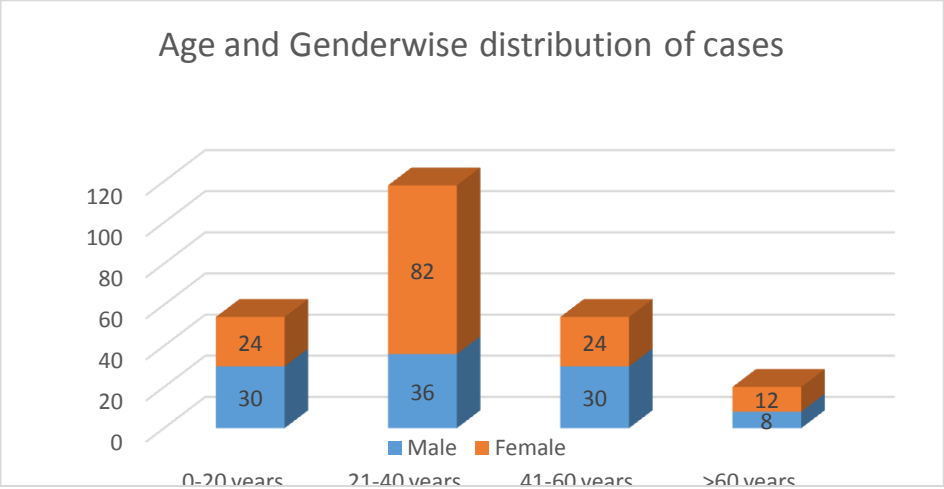


Table 4: Association of age/gender with disease outcome

Age group (years)	Males	Females	Total
	Complicated	Complicated	
0-20	12 (10.34%)	12 (10.34%)	24 (20.69%)
21-40	12 (10.34%)	38 (32.76%)	50 (43.10%)
41-60	20 (17.24%)	14 (12.07%)	34 (29.31%)
>60	02 (1.72%)	06 (5.17%)	08 (6.90%)
Total	46 (39.66%)	70 (60.34%)	116 (100%)

Graph 4: Association of age/gender with disease outcome

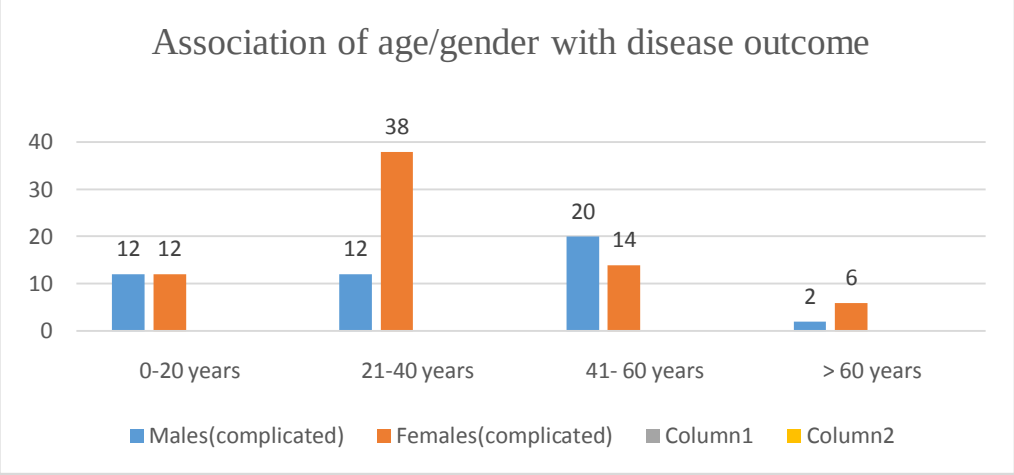
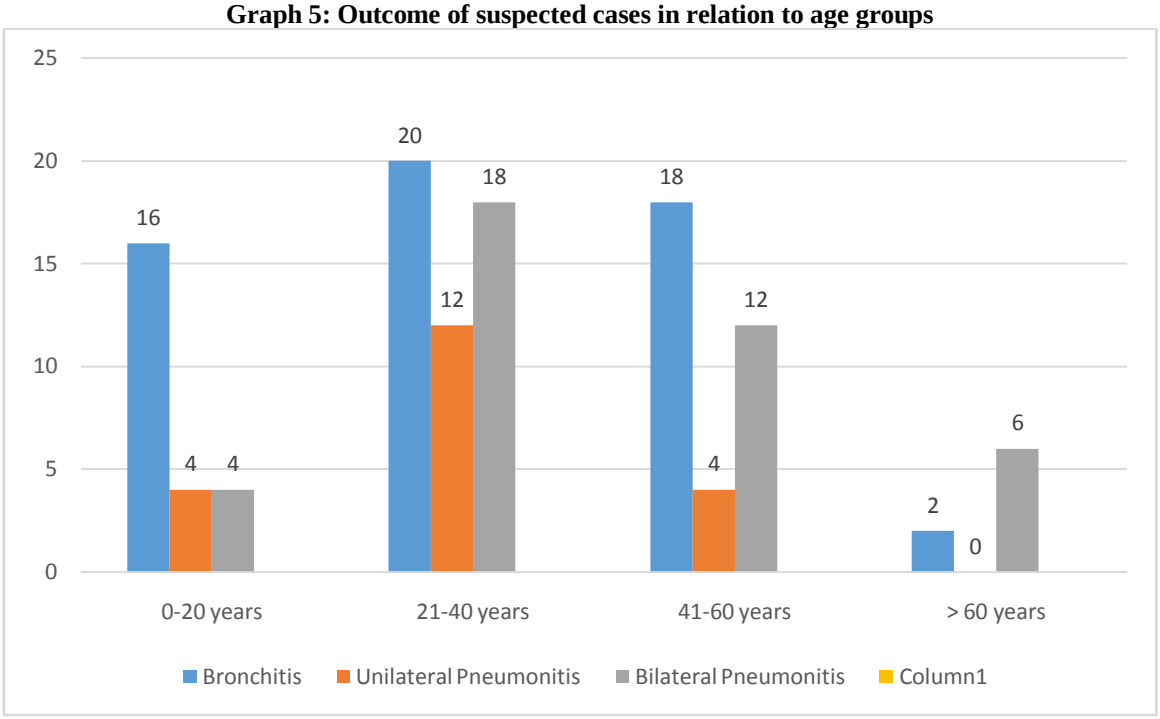


Table 5: Morbidity of suspected and probable cases in relation to age groups (n= 116)

Age group(years)	Bronchitis	Unilateral pneumonitis	Bilateral pneumonitis
0-20	16 (6.5%)	4 (1.62%)	4(1.62%)
21-40	20 (8.13%)	12 (4.87%)	18 (7.31%)
41-60	18 (7.31%)	04 (1.62%)	12 (4.87%)
>60	02 (0.81%)	-	06 (2.43%)
Total	56 (22.76%)	20 (10.56%)	38(15.44%)

Graph 5: Outcome of suspected cases in relation to age groups



IV. Discussion

During 2015 swine flu epidemic 331 cases of acute respiratory infections were admitted for which 85(confirmed) cases were found H1N1 positive.Among remaining 246 cases, were positive for Human Influenza A (probable). Out of 246(H1N1 suspects),116 patients have developed complications like bronchitis, severe bronchospasm, unilateral pneumonia, bilateral pneumonia.Usually acute respiratory infections are because of respiratory viruses, which are mild and self limiting with rare minimal complications. The reasons can be virulence of the, genetic or environmental factors needs further studies to establish. Eventhough they developed complications,early detection and initiation of treatment will yield good results.

Among some of the patients with complicated and comorbid conditions like pulmonary Koch's , Diabetes mellitus, pregnancy, bronchial asthma, obesity were observed.

A total 246"suspects" of swine flu influenza A H1N1 infection were hospitalized from January 2015 to March' 2015. Maximum cases 118 (47.97%) were admitted between 21 – 40 years of age group. Among them 50 patients developed complications with significant female predominance. 246 total cases and 38 (26.76%)showed high morbidity, which clearly reflects its high prevalence and pathogenicity among the younger population. During the pandemic of 2009 in Western Rajasthan too, the majority of the infected and sick patients were young (age <45 years) and that older populations were less affected. These results are similar to those reported in other studies [5-12].

In present study it was observed that 116 out of 246 patients(47.15%) had complications like Bronchitis, unilateral and bilateral Pneumonias and Koch's lesions. Maximum cases and high morbidity 70 (60.34%) were seen in females compared to males i.e, 46(39.65%). The major complication was Bronchitis(56 cases 22.76%) followed by Bilateral Pneumonia (38 cases 15.4%) This is similar to that reported in other studies [5-7].

Females were predominant and morbidity was also more in females as compared to males. These observations were found to be statistically significant and were comparable with the following studies. Sabra L Klein et al.[7] at USA, and Fielding J et al.[10] at Australia, in their study observed that the outcome of disease was worse in females. These findings were consistent with the various other similar studies done by Sabra L Klein et al.[7] in USA, Mohammad A et al (2010)8 in Saudi Arabia.Knowledge about cases will help public health decision makers plan and respond to future pandemic. This study also paves the way for future research addressing questions as to why the morbidity and mortality was high in the recent outbreak as compare to previous pandemic of 2009-2010.

V. Conclusions

The present study revealed that proportion of swine flu suspects were higher in 21-40 years of age group.The complications of disease weremore in females as compared to males. As, the magnitude of the

problem of Swineflu is ever increasing in our country, similar surveillance and care should be there in cases with acute respiratory illnesses.

VI. Recommendations

1. Early detection of cases can reduce the burden of disease, so the health system should be strengthened to detect the suspected cases in early stage of disease to prevent/ treat associated complications. Voluntary early reporting of cases should be encouraged through various health campaigns.
2. As there is a risk of cases in winter season, special measures should be taken during pre-winter season in the community. High alert should be declared during monsoon season for community as well for Health system.
3. Referral system from primary- secondary- tertiary care should be strengthened, to avoid delay in transfer and management of diagnosed cases.
4. Health education and preventive measures regarding personal hygiene can reduce the disease transmission and overall disease burden in community.

Limitation of the study

This study was restricted to hospitalized patients. Therefore, many cases of Influenza A H1N1 may have been missed. Not being a community-based study, epidemiological conclusions cannot be extrapolated to the epidemic as a whole. Regional geographical conditions were not accounted for, which may have a significant impact on prevalence and morbidity. Further studies are required to find out other causative agents (any particular virus and its virulence).

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