



Original Research Article

Review of swine flu positive cases in Kakinada-2018

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ABSTRACT

Introduction: Influenza is known to cause annual seasonal epidemics. Swine origin influenza was first recognized in the border area of Mexico and United States in April 2009.¹ The currently circulating strain of Swine origin influenza virus of the H1N1 strain has undergone triple re-assortment and contains genes from the avian, swine and human viruses and is known for the rapidity with which it spreads to the community.²

Materials and Methods: 400 cases suspected with influenza like illness from in and out patient units of department of Pulmonary Medicine, Government General Hospital, Kakinada were included in the study. 70 patients were subjected to RT-PCR. Medical records of 42 patients who were admitted, who were suspected clinically as H₁N₁ and confirmed by RT-PCR method, were examined thoroughly in the present study. An ethical committee approval and consent was taken from all patients before included in the study.

Results: out of 400 cases 250 are of category A and 80 patients are of category B. Out of Category C patients, 42 are H1N1 positive by RT-PCR. Among 42 cases, most common affected age group is 51-60 years (37.40%). Males are more involved (52.38%). The common presenting symptoms were breathlessness, cough, and fever. 59.52% of positive cases were associated with various comorbidities.

Conclusions: Most of patients with influenza like illness belongs category A and B. In our area H1N1 prevalence of is high in elderly age group and in males. Most of the patients recovered well with Oseltamivir and symptomatic treatment. Proper preventive measures, personal care and hygiene and isolation of patients and admission to designated swine flu ward can be helpful in preventing the spread of infection with in the community.

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1. Introduction

H1N1 is a novel strain of Influenza A virus which is evolved by genetic re-assortment.³ WHO declared H1N1 as a pandemic on 11th June 2009.³ H1N1 virus can be transmitted to human beings via either contact with infected pigs or environmental contamination with some influenza virus.⁴ In India, on May 16, 2009 first confirmed case of H1N1 was found in Hyderabad. Total number of cases reported in India in 2018 was 15266, out of them 1128 cases died. In Andhra Pradesh out of 402 H₁N₁ detected cases, 17 cases died.

Symptoms like sore throat, fever, cough, severe headache, muscle pains vomiting, diarrhea, respiratory distress, weakness and fatigue are the usual presenting complaints which usually appear in rapid succession. Children and pregnant woman are at risk. In more severe cases, H1N1 causes pneumonia [can be fatal] particularly in the young and the elderly patients.⁵ Patients associated with co-morbid conditions like asthma, neurological disorder, diabetes, retro viral disease, chronic immunosuppression, cardiovascular disorder, chronic renal disorder and structural lung disease are more susceptible for getting H1N1 infection.⁶ Either in government or private sector, patients with flu like symptoms should be screened and categorized into A, B or C based on severity and associated comorbidities. In

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order to prevent and contain outbreaks of Influenza, the following guidelines for screening, testing and isolation are to be followed:

1.1. Category-A

1. Uncomplicated or mild illness
2. Symptoms: cough/ sore throat, mild fever with or without body aches, headache, vomitings and diarrhea.
3. RT-PCR testing was not required.
4. Oseltamivir not required. Treated symptomatically.
5. The patients should be monitored reassessed at 24 to 48 hours. Home isolation advised. Avoid mixing up with public and high-risk members of family.

1.2. Category-B

1. Uncomplicated but severe symptoms or high risk groups.
2. B1. Along with Category-A symptoms, if the patient has high grade fever and severe sore throat.
3. B2. Along with Category-A symptoms, individuals having any of the following high-risk conditions (Age more than 65 years, Infants, Children aged ≤ 5 years, Pregnancy, Chronic lung diseases, Chronic heart, liver kidney or neurological disease, Blood disorders, Diabetes mellitus, immunosuppressive states, obesity, Malignancy).
4. RT-PCR testing was not required.
5. Oseltamivir should be given along with symptomatic treatment. Home isolation advised. Avoid mixing with public and high-risk members of family.

1.3. Category-C

1. Complicated form
2. Along with Category-A and Category-B, if the patient has any one or more of the following symptoms and signs:
3. Symptoms: Shortness of breath, Altered mental status, Hemoptysis, Poor feeding and Somnolence, Seizures, Decreased urine output, Worsening of initial symptoms beyond 72 hours, Worsening of underlying chronic diseases
4. Signs: Tachypnea, Hypotension, SpO₂<90%, Cyanosis.
5. RT-PCR testing is required. Start empirical antiviral therapy with Oseltamivir without waiting for result. Immediate hospitalization and treatment initiation required.

The present study was conducted

- i. To know the clinical profile, factors affecting the response of patients, prognosis and outcome in H1N1 positive patients.
- ii. To understand the disease epidemiological patterns, so

that high risks groups could be identified.

2. Materials and Methods

400 cases suspected with influenza like illness (cough, sore throat, fever, respiratory distress) from in and out patient units of department of Pulmonary Medicine, Government General Hospital, Kakinada were categorized in to A (250 patients), B (80 patients) and C (70 patients) according to WHO guidelines. Consent was taken from all patients before included in the study. Patients in category C were subjected to RT-PCR by Department of Microbiology. 70 patients were subjected to RT-PCR. 42 cases in them positive for H1N1. Medical records of those 42 patients who confirmed as H1N1 positive by RT-PCR method, were examined thoroughly in the study during a period from October 2018 to April 2019. These 42 cases are the study group and are subjected to battery of tests including chest X-ray, CT Chest, all routine blood and urine examinations.

3. Results

Table 1: Distribution of various categories among 400 cases

Category	Total no.	%	RT-PCR	
			+ve	-ve
A	250	62.5%	-	-
B	80	20%	-	-
C	70	17.5%	42	28

Table 2: Sex distribution among RT-PCR positive cases (42)

Gender	Number	%
Male	22	52.38
Female	20	47.61

Table 3: Age distribution among RT-PCR positive cases (42)

Age	Number	%
0-20	3	7.14
21-30	5	11.90
31-40	9	21.42
41-50	10	23.80
51-60	12	28.57
>60	3	7.14

Table 4: Travel history among RT-PCR positive cases (42)

Travel history	Number	%
Yes	9	21.42
No	33	78.57

Table 5: Presenting complaints among RT-PCR positive cases (42)

Symptom	Number	%
Cough	41	98.6
Fever	33	80.67
Dyspnea grade according to MMRC	0-2	32
	3&4	10
		23.80

Table 6: Association with comorbidities among RT-PCR positive cases (42)

Comorbidity	Number	%
Present	25	59.52
absent	17	40.47

Table 7: Chest radiograph findings among RT-PCR positive cases (42)

Chest radiograph	Number	%
Normal	14	33.33
Bilateral basal infiltrates	22	52.38
Atypical presentations (lobar pneumonia, upper lobe predilection, unilateral involvement)	6	14.28

Table 8: CT chest findings among RT-PCR positive cases (42)

CT chest	Number	%
Normal	16	38.09
Bilateral ground glass opacities and consolidation	20	47.61
Atypical presentation	6	14.28

Table 9: Respiratory assistance need (NIV, INVASIVE VENTILATION) among RT-PCR positive cases (42)

Parameter	Number	%
Respiratory failure	9	21.42
Need for Respiratory assistance	4	9.52

Table 10: Outcome among RT-PCR positive cases (42)

Parameter	Number	%
Discharged	40	95.23
Died	2	4.76

4. Discussion

Influenza A H1N1 is a highly contagious pathogen which made headlines in 2009, as the so called swine flu, by causing a worldwide influenza pandemic.³ In India, Influenza virus has been generally ignored in public health and in healthcare. Etiology-specific diagnosis requires lab tests that are not widely available everywhere.⁷ Therefore what we know about epidemiology and clinical features are entirely from research studies only.

In present study 400 cases suspected with influenza like illness were included. 62.5% (250) patients were of category A. Category-A patients treated symptomatically. 20% (80) patients were of category-B and treated with Oseltamivir based on weight and symptomatically. Category-A and -B patients advised home isolation. Most patients were treated on out-patient basis. 70 patients suspected with category-C symptoms and their throat swabs subjected to RT-PCR. Out of 70 patients 42 patients were positive for H1N1. Out of 42 patients, 52.38% were males. Males were predominant in my study. Similar results were observed in Chowdary et al.,⁸ study with 52.1% males and various other Indian studies.⁹⁻¹² Male preponderance than female for H1N1 infection may be due to outdoor work. While the number of female participants were found to be more in studies done outside India like the one study conducted in Kuala Lumpur, Malaysia by Latiff et al.,¹³ and a study conducted by Lin et al.,¹⁴ in China.

In the present study most of the patients 28.57% belonged to 50-60 years age group. Most of the study group was adult population. 4.76%(2) patients were children less than 5years. Srinivasa et al.,¹⁵ reported that common age group that suffered with H1N1 infection was 21-30 years (60%) followed by 31-40 (30%). Bellei et al.,¹⁶ also confirmed the great burden of 2009 pandemic H1N1 infection among young adults.

Here in present study as the age increases the chances of getting infected with H1N1 increases. 59.52% of the patients infected were associated with various comorbidities (Diabetes, CKD, CLD, HIV, steroid therapy, undergoing chemotherapy, structural lung disease, Anemia). Young adults were less in number in the present study. With increasing age immunity decreases and chances of infection were more. This might be the reason for changing trend from young adults to older age group in the present study. 78.57% patients were without any travel history. In my study travel history didn't have significant association with disease.

In my study dyspnea was predominant symptom at presentation, seen in all cases of varying grades. Grade 1 and 2 MMRC in 76.19% cases and Grade 3 and 4 MMRC in 23.80% which was the basis for requirement of hospitalization followed by cough (98.6%) and fever (80.67%). All patients initially have cough and fever but most of them came to hospital after getting dyspnea. All patients had classical symptoms of influenza illness. Choudhry et al.,⁸ and Broor et al.,¹⁷ reported fever as the most common presenting symptoms in their studies. According to study done by Prakash G in 2013, cough was most common presenting symptom followed by fever in 96.46% cases, sore throat in 80.53% cases and breathlessness in 72.56% cases.⁴

Negligence of one's own health in the initial stages and using inappropriate medication from local medical shops for

cough and fever may be the reason for presentation with dyspnea in present study. 52.38% cases show bilateral basal inhomogeneous opacities in chest radiographs. 47.61% cases show bilateral ground glass opacities in CT Chest.

In the present study need for respiratory assistance was minimal i.e., in 9.52% (4 cases) among positive cases. 4.76% patients died. In Singh et al., study out of 304 H1N1 cases, 58 expired (mortality rate of 19.08%).³ Mortality rate was less in present study compared to Singh et al.³ Timely treatment initiation and respiratory assistance provision by noninvasive ventilation, positive cases are less when compared to Singh et al., may well be the reasons for low mortality in present study.

All patients in category C presented with symptoms and signs of complicated influenza illness. All were treated with antiviral therapy (for adults Oseltamivir 75mg BD, for children 30 mg BD oral suspension), IV fluids, O₂ supplementation, maintained hydration, electrolyte balance and nutrition. Antibiotics for secondary infection, ventilatory support, vasopressors for patients in shock. In present study 2 cases are less than 5 years old. 3 cases are health care providers. 1 case was of antenatal mother. Cases were kept in swine flu isolation ward. Most of cases need respiratory assistance in the form of non-invasive ventilation. 3 cases needed invasive ventilation. Out of them 2 cases died. 28 patients with category C symptoms, who are negative for H1N1 RT-PCR were treated with Oseltamivir according to weight. Other differentials for viral pneumonia should be considered while treating them.

Older age groups were at increased complication risk in spite of proper treatment. Severity of infection was high in older age groups with comorbidities which led to hospitalization.

5. Conclusions

H1N1 infection should be considered in the differential diagnosis for patients presenting with fever and respiratory illness or pneumonia. Early detection of H1N1 infection and prompt initiation of treatment is important for preventing complications and mortality. Steps to control the spread of infection are very essential to limit the transmission of H1N1. Flu can be prevented by avoiding close contact with high risk patients and by hand washing, by covering nose and mouth while coughing or sneezing. Adequate rest and proper hydration allows early recovery. Health care providers should take necessary precautions while handling H1N1 cases by means of isolation of positive cases, using N95 masks vaccination for high risk groups to prevent themselves and others getting infected with H1N1.

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None.

7. Conflicts of Interest

None declared.

8. Acknowledgment

Nil.

References

1. Chang LY, Shih SR, Shao PL, Huang DT, Huang LM. Novel swine-origin influenza virus A (H1N1): the first Pandemic of the 21st century. *J Formos Med Assoc.* 2009;108:526–32.
2. Shinde V, Bridges CB, Uyeki TM. Triple reassortment swine influenza A (H1N1) in humans in the United States. *New Eng J Med.* 2005;360:2616–25.
3. Singh M, Sharma S. An epidemiological study of recent outbreak of Influenza A H1N1 (Swine Flu) in western rajasthan region of India. *J Med Allied Sci.* 2013;3(2).
4. Prakash G. Epidemiological and clinical profile of patients with swine flu (Influenza A, H1N1) attending Guru Govind Singh Government Hospital, Jamnagar, India. *J Res Med Den Sci.* 2013;1(1):1–6.
5. Lamb RA, Choppin PW. The Gene Structure and Replication of Influenza Virus. *Annu Rev Biochem.* 1983;52(1):467–506.
6. Brankston G, Gitterman L, Hirji Z, Lemieux C, Gardam M. Transmission of influenza A in human beings. *Lancet Infect Dis.* 2007;7(4):257–65.
7. Mukherjee A, Roy T, Agrawal AS, Sarkar M, Lal R, Chakrabarti S. Prevalence and epidemiology of pandemic H1N1 strains in hospitals of Eastern India. *J Public Health Epidemiol.* 2010;2(7):171–4.
8. Choudhry A, Singh S, Khare S, Rai A, Rawat DS, Aggarwal RK. Emergence of pandemic 2009 influenza A H1N1. *India Indian J Med Res.* 2012;135:534–7.
9. Kumar BA, Karnum S, Kumar SY, Ugargol AR, Naik VA, et al. Pandemic influenza A H1N1 awareness in a rural community of North Karnataka, India. *Trop J Med Res.* 2015;18(2):74–9.
10. Kumar N, Sood S, Singh M, Kumar M, Makkar B, et al. Knowledge of swine flu among Health Care workers and General Population of Haryana India during 2009 pandemic. *Australas Med J.* 2010;3(9):614–7.
11. Singh S, Kaur P, Singh G. Study to assess the awareness, perception and myths regarding swine flu among educated common public in Patiala District. *Int J Res Dev Health.* 2013;12:54–60.
12. Chaudhary V, Singh RK, Agrawal VK, Agarwal A, Kumar R, Sharma M. Awareness, perception and myths towards swineflu in school children of Bareilly. *Indian J Public Health.* 2010;54:161–4.
13. Latiff LA, Parhizkar S, Zainuddin H, Chun GM, Rahiman MA, et al. Pandemic influenza A (H1N1) and its prevention: A crosssectional study on patients' knowledge, attitude and practice among patients attending primary health care clinic in Kuala Lumpur. *Malaysia Glob J Health Sci.* 2012;4:95–102.
14. Lin Y, Huang L, Nie S, Liu Z, Yu H, et al. Knowledge, attitudes and practices (KAP) related to the pandemic (H1N1) 2009 among Chinese general population: A telephone survey. *BMC Infect Dis.* 2011;11:128.
15. Rao SRJ, Rao M, Swamy N, Umapathy BL. Profile of H1N1 infection in a tertiary care center. *Indian J Pathol Microbiol.* 2011;54(2):323–5.
16. Bellei NC, Cabeca TK, Carraro E, Goto JM, Cuba GT, et al. Pandemic H1N1 illness prognosis: evidence from clinical and epidemiological data from the first pandemic wave in São Paulo, Brazil. *Clin.* 2013;68(6):840–5.
17. Broor S, Sullender W, Fowler K, Gupta V, Widdowson MA, et al. Demographic Shift of Influenza A(H1N1)pdm09 During and After Pandemic, Rural India. *Emerg Infect Dis.* 2012;18(9):1472–5.

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