Original Research Paper

Volume-10 | Issue-2 | February - 2020 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Medicine

A STUDY OF H1N1 VIRAL INFECTION IN AND AROUND VISAKHAPATNAM

Dr. B. Manjula Assistant Professor, Dept. of Microbiology, Andhra Medical College, Visakhapatnam.

Dr. M. Manjula* Postgraduate Student, Dept. of Microbiology, Andhra Medical College, Visakhapatnam *Corresponding Author

Dr. Sai Jyothirmai Postgraduate student, Dept. of Microbiology, Andhra Medical College, Visakhapatnam

ABSTRACT "Swine flu" is also called as "swine influenza" a novel H1N1 Swine origin influenza. It is an acute infection disease of the respiratory track. In India the novel H1N1 virus infection has been reported from all over the country. A total of 450 samples from clinically suspected persons have been tested for H1N1 infection. Among 450 samples, 77 (17%) were positive for novel H1N1 infection. Present study revealed, gender wise distribution of H1N1 infected patients were 41 cases (53.2%) were females and 36 (46.7%) were males. Age wise distribution revealed, 20 cases seen in age group 41-50 yrs, 16 cases were in 51-60yrs age group. In this study we recorded, highest number of cases (n=126) 28% were positive for H1N1 infection in the month of April as a seasonal variation. During outbreaks of emerging infectious diseases accurate and rapid diagnosis is critical for minimizing further spread through timely implementation of appropriate vaccines and antiviral treatment. Since the symptoms of novel H1N1 influenza infection are not specific, laboratory confirmation of suspected cases is of prime importance.

KEYWORDS : Swine flu, H1N1, Influenza virus

INTRODUCTION

"Swine flu" is also called as "swine influenza" a novel H1N1 Swine origin influenza. It is an acute infection disease of the respiratory track. Most of the cases are of sporadic, epidemic and pandemic form of influenza. H1N1 belongs to Orthomyxo viridae family and produces virions that are 80 to 120 nm in diameter, with an RNA genome size of approximately 13.5 kb. The swine influenza genome has 8 different regions which are segmented and encode 11 different proteins. It is enveloped (8 segments) RNA virus. In humans, H1N1 swine flu presents as an influenza-like illness with symptoms similar to seasonal influenza, i.e. fever, cough, sore throat, runny nose, muscle pains, severe headache, however, a considerable proportion of patients reported vomiting or diarrhea which is unusual in seasonal influenza (1). On the June 2011, the World Health Organization (WHO) raised its pandemic alert (8, 9). Pigs are the melting pots. They have receptors for both Avian and human viruses. So when a cell is infected by both the viruses due to segmented rate of genome, genetic reassortment occurs and novel strain of influenza virus originates which is responsible for the Pandemics. The pandemic H1N1 virus, is believed to be transmitted from infected individuals through air by coughs or sneezes, creating aerosols containing the virus (2 & 7). Human to human transmission occurs by inhalation of infectious droplets, by direct contact which is facilitated by air, land travel, social gathering. This virus caused similar symptoms to those seen in swine, possibly due to reassortment of the viral RNA structure, which allowed human-to-human transfer (3, 4). The timing and duration of influenza season varies. In the present study most cases were observed from October, January. Variation seen in April and May also been reported.

India ranked 3rd among most affected countries. In India, Rajasthan and Gujarat are the most affected regions. In 2016-2017 highest number of cases was noted in Andhra Pradesh in India The majority of cases of H1N1 have been mild influenza illness, mostly associated with fever. Some patients have gastrointestinal symptoms including diarrhea. Only a small percentage of confirmed cases had been hospitalized. Underlying conditions such as asthma or other lung diseases, diabetes, morbid obesity, auto-immune disorders, immunosuppressive therapy, neurological or cardiovascular disorders or pregnancy are predisposing factors for hospitalization (5).

Aim and Objectives:

The main aim and objective of the present study was to detect H1 N1 infection in clinically suspected cases of Swine flu by molecular method RT- PCR in and around Visakhapatnam.

METHODOLOGY

The prospective study carried out in the Department of Microbiology, Andhra Medical College, Visakhapatnam for a period of 9 months, from February 2017 to October 2017. The study was approved and ethical clearance was obtained by the institutional ethical committee.

All the suspected cases for influenza like illness attending our hospital were categorised in to A, B and C categories based on the revised guidelines of Ministry of Health and Family Welfare, Government of India on categorization of seasonal influenza A H1N1 cases (6). Briefly, category A included patients presenting with mild fever with cough/sore throat with or without body pains, headache, vomiting and diarrhea. Category B included category A+ high grade fever and severe sore throat and/or high risk groups. Category C included category A or B with one or more of the signs and symptoms of breathlessness, chest pain, drowsiness, hypotension, cyanosis, irritability or worsening of the existing chronic condition. All the category C patients of all the age groups were isolated in isolation ward and only samples from category C patients (n=450) were subjected to laboratory testing for H1N1 as per the guidelines. All the category A and B patients were excluded from the study.

Viral nucleic acid detection was done by Trueprep H1N1 micro PCR assay. Clinical specimens like nasal or throat or nasopharyngeal swabs were collected by nylon swab and transported in the viral lysis medium. As soon as the samples were received in the Microbiology department, viral RNA was isolated by Trueprep MAG sample preparation device. Following the extraction of viral nucleic acid it was then dispensed into a microtube containing freeze dried PCR reagents including reverse transcriptase. After allowing for 20 seconds, the entire contents were pipetted and dispensed in to the Truenat H1N1 chip and the chip was inserted into Truelab Realtime micro PCR analyzer where the RNA was first converted into complimentary DNA and then further thermal cycling takes place. At the end of test run, results were displayed as H1N1 detected or not detected. This whole procedure takes around an hour time.

RESULTS

Among 450 samples, 77 (17%) were positive for novel H1N1 infection. Present study revealed, gender wise distribution of H1N1 infected patients were 41 cases (53.2%) were females and 36 (46.7%) were males.

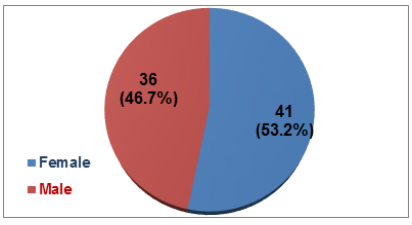

Fig-1 shows the gender distribution in the present study.

Age wise distribution revealed, highest no of cases 20 seen in age group 41-50 yrs, 16 in 51-60yrs age group. Highest number of cases

(n=126) 28% were positive for H1N1 infection in the month of April as a seasonal variation.

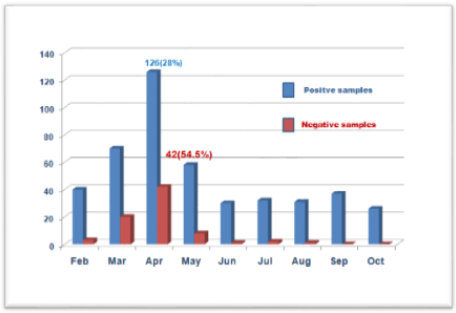

Fig -2 shows the seasonal variations in the present study.

DISCUSSION

There are many viruses like influenza; swine flu virus also changes constantly. Pigs can be infected by avian influenza and human influenza viruses as well as swine influenza viruses. When influenza viruses from different species infect pigs, the viruses can reassort and new viruses that are a mix of swine, human and/or avian influenza viruses can emerge. A pandemic is generally defined as a novel infection that spreads globally. On that definition, novel H1N1 is already "pandemic." In present study 17.1% positive cases were positive which was correlated with the study of Gamez J et, al., 17.5% and Samara T. et al 17.35%. Seasonal variations were observed in this study, that is 33.3% of cases recorded in the month of April, and the results were correlated with Jain S et al., 2009 and Shoba Broor. Age and Gender wise distribution observed in this study includes female population 46.8% which is correlated with the study of Sing et al and Olivera W et al.(7 & 8). Age wise distribution observed in the study group was 41-50 yrs 34.1% which was correlated with the study of Archer B et al. (2009)(1).

All the swine flu influenza H1N1 positive patients presented with high grade fever with or without chills and all were having cough with majority being productive cough. Shortness of breath was observed in majority of the positive cases and bilateral crepts were also observed predominantly.

CONCLUSION

Rapid diagnosis of H1N1 with mini RT-PCR at an early stage is crucial for minimising spread of infection in community and prevent complications, and reduce morbidity and mortality. The rapid and accurate laboratory diagnosis of influenza is necessary through a variety of laboratory modalities. The pandemic H1N1 influenza virus is now the dominant strain in most areas of the world.

REFERENCES

1. Archer, Brett N.; Cohen, Cheryl; Naidoo, Dhamari; Thomas, J.; Makunga, C.; Blumberg, Lucille H.; Venter, Marietjie; Timothy, G.A.; Puren, Adrian; McAnerney, Johanna M.; Cengimbo, A.; Schoub, Barry D. Interim report on pandemic H1N1 influenza virus infections in South Africa, April to October 2009 : epidemiology and factors associated with fatal cases/2263/13258, 2009-10
2. Branksto G , Gitterman L , Hirji Z , Lemieux C , Gardam M . 2007. Transmission of infl uenza A in human beings . Lancet Infect Dis. 7 : 257 – 265 .
3. Broor S, Chahar HS, Kaushik S. Diagnosis of influenza viruses with special reference to novel H1N1 2009 influenza virus. Indian J Microbiol. 2009;49(4):301-07.
4. Centers for Disease Control and Prevention (CDC) Outbreak of swine-origin influenza A (H1N1) virus infection—Mexico, March-April 2009. MMWR Morb Mortal Wkly Rep. 2009;58:467–70.
5. Jain S, Kamimoto L, Bramley AM, Schmitz AM, Benoit SR, Louie J et, al., 2009. Hospitalized patients with 2009 H1N1 influenza in the United States. N Engl J Med. 361:1935–1944.
6. Ministry of Health & Family Welfare Seasonal Influenza A (H1N1) Guidelines on Categorization of Seasonal Influenza A H1N1 Cases During Screening for Home Isolation, Testing, Treatment and Hospitalization. Available from https://mohfw.gov.in/sites/default/files/394697031477913837_3.
7. Oliveira W, Carmo E, Penna G, Kuchenbecker R, Santos H, Araujo W, Malaguti R, Duncan B, Schmidt M; Surveillance Team for the pandemic influenza A(H1N1) 2009 in the Ministry of Health. Pandemic H1N1 influenza in Brazil: analysis of the first 34,506 notified cases of influenza-like illness with severe acute respiratory infection (SARI). Euro Surveill. 2009 Oct 22;14(42). pii: 19362.
8. Samara T, Pawar M, Yadav A. One year experience with H1N1 infection Clinical observation from a tertiary care hospital in Northern India. Indian Journal of Community Medicine. 2011;36:241–43.
9. Singh K, Bhat N, Chaudhary H, Asawa K, Sharda A, Agrawal A. Knowledge, attitude, behavioural response and use of preventive measures regarding pandemic H1N1 influenza outbreak among dental students in Udaipur city, India. Oral Health Prev Dent. 2012;10:339–44.
10. Soma das. Bangalore-based Molbio develops India's first swine flu diagnostic kit. The Economic times. March 3, 2015.
11. Tellier R . 2006. Review of aerosol transmission of infl uenza A virus . Emerg Infect Dis. 12:1657– 1662.
12. World Health Organization. 2009. Laboratory-confirmed cases of pandemic (H1N1) 2009 as officially reported to WHO by States Parties to the IHR (2005) as on 6 August 2009.
13. World Health Organisation: Global alert and response. 2009. Clinical management of human infection with new influenza A (H1N1) virus: initial guidance.