

Review Article

Swine Flu: A Perpetuating Challenge to Health Personnels

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An Influenza virus causes outbreaks and epidemics resulting in significant morbidity and mortality. Swine flu is respiratory disease caused by Influenza viruses that infects the respiratory tract of pigs. Usually the viruses spread among pigs. But it has now become deadly for human.

Introduction

H1N1 was first identified in Mexico in April 2009, known as swine flu because the virus closely resembled the swine influenza viruses. It spread very rapidly from country to country. The WHO declared on June 11, 2009 that H1N1 (swine influenza) is pandemic of grade 6 and warned the second outbreak possible^[1]. It is estimated that 43-89 million people around the globe were infected. As the virus has been circulating worldwide India saw a major resurgence in December 2014⁽²⁾. It is estimated that more than 25,000 people are infected with H1N1 viruses in India. According to health official department as on 20th March 2015 the death toll in India due to latest swine flu outbreak is 2035 out of nearly 337610 people infected with this virus. According to Times of India The state of Gujarat has highest death toll with 215 death from this disease, followed

by Rajasthan with 267 deaths and Madhya Pradesh with 160 deaths .Rajasthan has the highest number of confirmed case with 5610 followed by Gujarat with 4614 cases and Delhi with 2999 cases. Swine flu has also affected Himachal Pradesh. Till 18th March 2015, 220 Patient has been tested for Swine flu out of which 79 tested positive. Out of these 79 patient 20 people died[3]. According to health official all the deaths may not have occurred only due to Influenza A, H1N1 infection but may be due to co-morbid conditions like Asthma, diabetes, Cardiac diseases or immunocompromised patients etc. Morbidity and mortality of health personals has also been reported India faced a huge public crisis during the recent spurt of H1N1 pandemic with tremendous pressure and resources constrain on the health care system were as India is more

vulnerable to Swine flu because of its climate, while in most country it appears during winter season, where as India twice a year during the monsoon and winter season. This may be due to high population density, overcrowding at public places, transport, poor sanitation and hygiene is also contributory factor for swine flu.

Influenza virus(A,B,C) are enveloped RNA viruses with a segmented genome that means the viral RNA genetic code is not a single strand of RNA but exist as eight different RNA segments in Influenza it exhibits two main surface antigens H1(Hemagglutinin type 1) and N1 (Neuraminidase type1) . The eight RNA strands from novel H1N1 flu have one strand derived from human flu strand to from avian strands and five from swine strands[4].

Symptoms

Most symptoms are same as seasonal flu. These include cough ,fever sore throat, stuffy or running nose, body aches, headache, chills, fatigue some may develop diarrhoea vomiting, though this is more common in children than adults. Complication like Pneumonia, bronchitis, sinus,ear infection has also been reported .The incubation period is said to be 1-4 days through symptoms may appear in about 7 days. Hence infected person can pass on infection to another person from day 1[5].

Transmission

Infected person with swine flu can spread infection to others upto about 6 feet away. It spread mainly by droplets made by sneezing or coughing less oftenly people may get infection by touching a surface as object that has flu virus on it and then touching their own mouth,nose or eyes etc. People at high

risk from flu includes patient with certain chronic medical conditions such as asthma, diabetes, cardiac disease ,pregnant women and those with compromised immune system eg. HIV patients health care providers like Doctors, Dentist, Microbiologist and Paramedical staff are at high risk while diagnosing and treating patients.

Diagnosis

A number of diagnostic test are available to detect the presence of Influenza virus in respiratory specimens these tests are (RIDT) Rapid infection diagnostic test, Direct/Indirect immunofluorescence assay and nucleic acid amplification test including RT-PCR. These test can be performed on various samples like nasopharyngeal swab, nasal aspirate , bronchial alveolar lavage and endotracheal aspirate).

The availability and the use of commercial Influenza rapid diagnosis test by lab and clinics increased in the recent years. Rapid infection diagnostic -test(RIDTS) are screening test for Influenza viruses infection they can provide results within 15 minutes more than 10 RIDTS have been approved by US food and drug administration having sensitivity about 50-70 percent and specificities are 90-95 % [6]. RT- PCR is the most accurate and sensitive test for Influenza virus including 2009 H1N1. RT-PCR is a platform capable of subtyping Influenza A viruses. This test was developed by CDC and this test can distinguish 2009 pandemic virus H1N1 from other Influenza. It is highly sensitive and specific test it gives results with in three hours [7].

Antiviral agents for Influenza

Licenced prescription Influenza antiviral agents available in India are Remantadine, Zanamivir (Relenza) and Oseltamivir

(Tamiflu). Remantadine are first generation antiviral agent effective against Influenza A. Drug stops viral uncoating by inhibition of the viral M₂ ion channel membrane protein. Zanamivir and osltamivir are second generation antiviral agents effective against Influenza A and B. These drug inhibit viral neuraminidase which is present in both Influenza A and B viruses[8].

Vaccines

Various vaccines available for Influenza H1N1 are Agripal, Fluarix,Nosovac andvaxigripetc with the spurt in swine flu seen this year, the union health ministry has recommended vaccination for health care workers for the three prevalent virus strains including H1N1.

Experts say vaccination is still not recommended for the general public barring special group such as children under the age of 5 years, elderly and immunocompromised patients beside health care workers who are handling patients[9].

Preventive measures

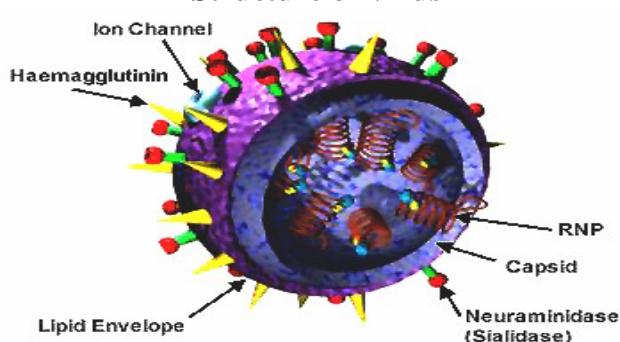
Health care service providers should follow proper guidelines which includes

*Isolation of the patient suspected to be infected *.Doctors and dentist while examining confirmed or suspected patients should wear disposable surgical masks,

gloves, eye protection device and also avoid direct contact* Dental operating chair should be cleaned with disinfectant liquid after treatment procedure* use disposable material such as syringes,cotton swab etc. during procedure and they should be disposed off immediately in the infection waste biohazard garbage bags* Wash hands often with soap or alcohol based hand wash*Microbiologist should wear personal protection equipment (PPE) which includes gloves, mask(three layer surgical mask N 95), long sleeved cuffed gown, protective eye wear goggles, cap, plastic apron during lab diagnostic procedure* person who developed Influenza like symptoms should encouraged to self isolate in their home for seven days after onset of illness *to seek medical care patient should wear a face mask* Patient in home isolation and their household members should be given instructions like frequently hand washing with soap and water or use of alcohol based hand gels(60%).

In conclusion, Since H1N1 is highly contagious so it a threat to health care providers as well as general public but the situation can be handled if the health personnels coming in contact with H1N1 infected patients follow the proper guidelines given by CDC/NCDC AND WHO.

Structure of Virus



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