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Megha Kadam*Institute of Professional Studies College
of Pharmacy, Gwalior (M.P), India*

A REVIEW ARTICLE ON SWINE FLU

Megha Kadam

ABSTRACT

Swine flu refers to swine influenza or the viral infection caused by any of the several types of swine influenza virus. Only people who used to have direct contact with pigs were observed to get swine flu in the past. H1N1 is an Influenza A virus. Swine flu can produce a number of symptoms in both adults and children. In India day by day the graph of infected person has been climbed up so, it is important to take into consideration about this disease as it may prove deadly one. The intensity of this disorder can be lowered by diagnosing and taking proper treatments. It transmitted to humans via contact with infected pigs or environments contaminated with swine influenza viruses. The scientists call this a ‘quadruple reassortant’ virus. This is a dangerous scenario in 21st century. So, there is a need to prevent and to treat the swine flu all over the world. Here we reveal that complete drug therapy for this disease for swine flu in several medicinal systems and prevention techniques like vaccine therapy. According to the World Health Organization (WHO) worldwide more than 209 countries and overseas territories or communities have reported laboratory confirmed cases of pandemic influenza H1N1. Alternate system of medicine such as Ayurveda, homeopathy and Siddha could provide very effective medicines for the prevention and treatment of swine flu without any side effects. One of the powerful health tools for control of influenza is vaccination.

Keywords: Swine Flu, Influnza, H1N1

1. INTRODUCTION

Infectious diseases, also known as communicable, contagious or transmissible diseases comprise clinically evident illness resulting from the infection, presence and growth of pathogenic biological agents in an individual host organism. The various causes of common infectious diseases are bacteria, fungus, parasites, and viruses. Respiratory tract infections are the most common infectious diseases. Upper Respiratory tract infections (URIs) includes rhinitis (common cold), sinusitis, ear infections, acute pharyngitis, tonsillopharyngitis, epiglottitis, and laryngitis of which ear infections and pharyngitis cause the more severe complications. The vast majority of URIs has a viral etiology. Rhinoviruses, parainfluenza and influenza viruses, human metapneumovirus, adenoviruses, and corona viruses are the main causes of URIs. The common lower respiratory tract infections (LRIs) in children are pneumonia and bronchiolitis. The major threats related to infectious diseases (IDs) have not changed substantially over the years. These include antimicrobial resistance, health care-associated infections, vaccine-preventable diseases, respiratory tract infections and HIV infection.¹

On April 2009, the Centers for Disease Control and Prevention (CDC) identified two cases of human infection with influenza A (H1N1) characterized by a unique combination of gene segments that had not been identified among human influenza A virus. Additional cases were rapidly reported leading the WHO to declare a pandemic phase level, indicating widespread human infection.

Correspondence

Megha Kadam*Institute Of Professional Studies College
Of Pharmacy, Gwalior (M.P), India*

This has caused widespread anxiety, especially among patients who are potentially immune-compromised and symptoms of serious systemic infection may be wrongly attributed to influenza A (H1N1)v. Swine flu (swine influenza) is a respiratory virus designed to work at molecular level of physiology, the drug takes its time to deliver the results.

Disease caused by viruses (influenza viruses) that infect the respiratory tract of pigs and result in nasal secretions, a barking-like cough, decreased appetite and listless behavior. Swine flu produces most of the same symptoms in pigs as human flu produces in people. Most cases of influenza A (H1N1) currently seem to have uncomplicated influenza-like illnesses; the most common symptoms are cough and fever. Calculating the case fatality ratio related to influenza A (H1N1) is highly dependent on estimates of the total number of people with the disease, which are not easy to obtain. Nevertheless, on the basis of surveillance data and mathematical modeling, the influenza A (H1N1) case fatality ratio seems to be higher than that of seasonal influenza, although it remains of the same order of magnitude.

The severity and deaths associated with seasonal influenza infection result in a large part from secondary complications such as secondary bacterial pneumonia (*Streptococcus pneumoniae* or *Staphylococcus aureus*), primary viral pneumonia and exacerbation of underlying chronic conditions. Initial observation suggests that children and young adults may be more susceptible to influenza A (H1N1) than older persons. It is still unclear whether the low incidence in people over 60 years of age is because of a partial immunity from former infections with H1N1 influenza viruses²

2. HISTORY

Swine influenza was first proposed to be a disease related to human flu during the 1918 flu pandemic, when pigs became sick at the same time as humans. The first identification of an influenza virus as a cause of disease in pigs occurred about ten years later, in 1930. For the following 60 years, swine influenza strains were almost exclusively H1N1. Then, between 1997 and 2002, new strains of three different subtypes and five different genotypes emerged as cause of influenza major cause of swine influenza in North America. In 1997-1998 H3N2 emerged. These strains, which include genes derived by reassortment from human, swine and avian viruses, have become a major cause of swine influenza in North America. Reassortment between H1N1 and H3N2 produced H1N2. In 1999 in Canada, a strain of H4N6 crossed the species barrier from birds to pigs, but was contained on a single farm.

The phylogenetic origin of the flu virus that caused the 2009 pandemic can be traced before 1918. Around 1918, the ancestral virus of avian origin, crossed the species boundaries and

infected humans as human H1N1. The same phenomenon took place soon after in America, where the human virus was infecting pigs; it led to the emergence of the H1N1 swine strain, which later became the classic swine flu. The new human H1N1 flu strain of avian origin, was kept transmitting among human populations until around 1957, when there was a co-infection between this strain and the avian H1N1 in humans. There was a reassortment event leading to the development of a new strain (H2N2). New events of reassortment were not reported until 1968, when the avian strain H1N1 infected humans again; this time the virus met the strain H2N2, and the reassortment originated the strain H3N1

3. CLASSIFICATION

The three genera of influenza viruses that cause human flu, two also cause influenza in pigs, with influenza-A being common in pigs and influenza-C being rare³. Influenza-B has not been reported in pigs. Within influenza-A and influenza-C, the strains found in pigs and humans are largely distinct, although due to reassortment there have been transfers of genes among strains crossing swine, avian and human species boundaries.

3.1 Influenza-A

Swine influenza is known to be caused by influenza –A subtype H1N1, H1N2⁴, H2N35, H3N16, In a pig three influenza-A virus subtypes worldwide⁷. In the United States, the H1N1 subtype was exclusively prevalent among swine populations before 1998; however, since late August 1998, H3N2 subtypes have been isolated from pigs. As of 2004, H3N2 virus isolates in US and Turkey stocks were triple reassortants, containing genes from human, swine and avian lineages⁸.

3.2 influenza –C

Influenza-C virus infects both humans and pigs, but does not infect birds⁹. Transmissions between pigs and humans have occurred in the past¹⁰. For example, influenza-C caused small outbreaks of a mild form of influenza amongst children in Japan and California.

4. TRANSMISSION

4.1 Transmission between pigs

Influenza is quite common between pigs, with about half of breeding pigs having been exposed to the virus in the US. Antibodies to the virus are also common in pigs in other countries. The main route of transmission is through direct contact between infected and uninfected animals. These close contacts are particularly common during animal transport. Intensive farming may also increase the risk of transmission as the pigs are raised in

very close proximity to each other. The direct of the virus probably occurs either by pigs touching noses, or through dried mucus. Airborne transmission through the aerosols produced by pigs coughing or sneezing are also an important means of infection.

Diffrence between Cold and Swine Flu

Symptom	Cold	Swine flu
Fever	Fever is rare with cold	Fever is usually present with the flu in upto to 80% of all swine flu. A tempreature of 100f r higher for 3 to 4 days
Coughing	A hacking productive (mucus producing) cough	A non productive cough is usually present with the swine flu
Chills	Chills are uncommon	60% of the people who have swine flu experience chills
Tiredness	Tiredness is faily mild	Tiredness is moderate to severe
Aches	Slight body ache and pains can be part of cold	Swere aches and pains are common
Headache	Headache is fairly uncommon	Headache is common and experienced by 80% of cases

4.2 Transmission to Humans

People who work with poultry and swine, especially people with intense exposure , are at increased risk of zoonotic infection with influena virus endemic in these animals, and constitute a population of human hosts in which zoonosis and ressortment can co-occur. Vaccination of these workers against influenza and surveillence for new influenza strains among this population may therefore be an important public health measure.

5. WHO ARE PRONE TO INFECTION WITH SWINE FLU?

- Older age group 65 years
- Pregnant woman
- Individuals with chronic lung disease
- Individuals with congestive heart failure
- Individuals with renal failure
- Immunosuppressant
- Hematological abnormalities
- Individuals with Diabetes mellitus
- Individuals with chronic hepatic disease

6. DIAGNOSIS

For diagnosis of swine influenza A infection, respiratory specimen (nasopharyngeal swab, throat swab nasal aspirate, nasal washing) would generally need to be collected within the first 4 to days of illness (when an infected person is most likely to be shedding virus).Most of the tests can distinguish between A and B types. The test can be negative (no H1N1 infection) or positive for type A and B. If the test is positive for type B, the flu is not likely to be swine influenza (H1N1). If it is positive for type A, the person could have conventional influenza strain or swine influenza (H1N1)

6.1 Sample Collection

It should be labeled clearly and include patient's complete information and should be sent to NIV, Pune or NICD, Delhi within 24 hours for further investigations. Laboratory biosafety measures should be followed for collection, storage, packaging and shipping of a influenza

7. MEASURES AND PREVENTION

Keeping hands clean is the most important step to avoid getting sick and spreading the H1N1 virus. Wash hands with clean water and hand soap. Rub hands together to form lather. Warning, Do not give aspirin (acetylsalicylic acid) to children or teenagers who have the flu; this can cause a rare but serious illness called Reye's syndrome. Check ingredient labels on over-the-counter cold and flu medications to see if they contain aspirin.Children younger than 2 years of age should not be given over- the-counter cold medications without first speaking with a healthcare provider. The safest care for flu symptoms in children younger than 2 years of age is using a cool- mist humidifier and a suction bulb to help clear away mucus. Over-the-counter cold and flu medications used according to the package instructions may help lessen some symptoms such as cough and congestion samples.

WHO safety precautions to be taken against swine flue are-

- The used tissues must be disposed off immediately after using them.
- Touching the eyes, nose or mouth without washing hands must be totally avoided.
- The nose and mouth must be covered with disposable tissues while coughing or sneezing.
- Hygiene and cleanliness must be maintained by washing hands frequently with soap and water.
- A doctor must be consulted immediately, in case flu-like symptoms are observed.
- In case of flu-like symptoms, the patient must be quarantined.
- One should stay at home from work, school and crowded places in case flu-like symptoms are observed.
- Schools are advised to avoid any large gathering of students during the course of the day in the school.
- Students, teachers and other employees working in schools/educational institutions are advised to stay at home if they develop flu like symptoms.
- All the schools should display “DO’S AND DON’TS” for H1N1 infection at all important place.

The World Health Organization (WHO) figures show that worldwide more than 209 countries and overseas territories or communities have reported laboratory confirmed cases of pandemic influenza H1N1 2009. Protection against influenza infection is conferred by neutralizing antibody for the two surface proteins, namely the hemagglutinin (HA) and the neuraminidase (NA). It has been difficult to develop a vaccine for H1N1 influenza A virus that provides long lasting immunity. This is due to the antigenic drift of the virus where the circulating strain in an infectious cycle is different from the previously circulating strain. Current inactivated vaccines provide essential protection when the vaccine antigen and the circulating viruses share high degree of similarity in the structural protein. Since new influenza virus antigenic variants emerge frequently from accumulation of point mutations in the structural protein, influenza vaccine antigens end to be updated frequently. One of the powerful health tools for control of influenza is vaccine. As novel strain hemagglutinin is different from seasonal influenza A, these seasonal influenza vaccines are not expected to provide protection against Swine Origin Influenza Virus (S-OIV) infection.

A step-wise approach to vaccinate particular groups may be considered by the Strategic Advisory Group of Experts of the WHO noting that countries need to determine their order of priority based on country-specific conditions: healthcare providers; pregnant women; those aged above 6 months with one of several chronic medical conditions; healthy young adults of 15—49 years of age; healthy children; healthy adults of 50—64 years of age; and healthy adults of 65 years of age and above. Since the S- OIV vaccine is not intended to replace the seasonal flu vaccine, individuals should be encouraged to get their seasonal flu vaccine along with it.

Swine flu, also known as H1N1 is a new influenza virus which is transmitted to humans via contact with infected pigs or environments contaminated with swine influenza viruses. The virus itself mutated so that it transmits from human to human. In the early phase of the infection, oesltamivir and zanamivir, neuraminidase inhibitor antiviral medications, could be used. As the golden adage says, Prevention is better than cure, hand washing, wearing face masks and avoiding touching surfaces that someone else who may have been exposed to swine flu has touched will, in combination, provide you with the best defenses.

8. DIFFERENT SYSTEM OF MEDICINE

8.1 Ayurveda

Ayurveda promotes the concept that if one's immune system is strong, then even if the body is exposed to viruses, one will not be affected. During a pandemic or an epidemic, Ayurveda emphasizes on the immunity of people living in regions affected by viruses. This branch of medicine promotes the intake of special herbs or decoctions to increase the immunity level of the people. Ayurvedic remedies comprise pure natural herbs which are effective in preventing swine flu. Moreover, the herbs are used to relieve swine flu symptoms, and boost the immune system against the H1N1 virus. Ayurvedic treatment for swine flu involves

This is done by prescribing various digestive fire strengthening herbs such as Guduchi (licorice), Tulasi (Holy Basil), Sahadevi, Neem (Indian Margosa Tree), Shunthi (ginger), Pippali (pepper) etc. Once the digestive fire is corrected, medicines such as Triphala, Rasna, Eranda, Guggulu can be prescribed to relieve the symptoms. Ayurvedic treatment for swine flu involves: Basil, Ginger and Garlic, Gooseberry and AloeVera, Camphor and Eucalyptus Oil.

8.2 Homeopathy

Considering that the Swine Flu virus produces symptoms similar to the human influenza virus, the following

homeopathy medicines may prove useful in cases of swine influenza: Gelsemium, Baptisia, Eupatorium perfoliatum, Sabadilla, Arsenicum, Arsenicum iodide, Dulcamara, Bryonia Phosphorus, Rhus toxicodendron.

8.3 Siddha System

The traditional Siddha system has very effective medicines for the prevention and treatment of swine flu without any side effects on the users a decoction made of Tulsi (*Ocimum tenuiflorum*), Karpooravalli (*Plectranthus amboinicus*), Black Pepper (*Piper nigrum*), Cloves (*Eugenia aromaticum*), Cardamom (*Elettaria cardamomum*) and Honey (*Apis mellifera*) would be effective for preventing the swine flu. The ingredients should be boiled in one litre of water and then filtered. An adult should take 150ml of the filtered portion once in a day while a child could be given 75ml. It could be taken for about 7 to 10 days. Other Siddha preparation for treating an infected person includes crushing hundred gm each of Nilavembu, Seenthil, Adothoda, Vishnu Karanthai, Parpadhan to make into a powder. Take 50 grams of the powder and heat it adding 1 litre of water. The infected adult should take 150ml while a child could be given 75 ml for 7 to 10 days.

9. CONCLUSION

Swine flu is a dangerous disorder which is spreading worldwide and this is a casual thing to be considered that more and more people in India are affected by it and the cases may increase. So, it is important to take into consideration about this disease as it may prove deadly one. And thus the intensity of this disorder can be lowered by diagnosing and taking proper Swine flu is a new virus that the world has never seen before, it has many similarities to the past pandemics and could ultimately turn into another 1918, however unlikely that sounds at this moment in time. Since its discovery in April it has spread around the globe and has caused infections in 74 countries, but the real number will be much closer to 500,000. The spread of this virus is far from over and the threat of a 2nd more severe wave in the autumn or winter has the world hanging on by a knife point. This virus could mutate and become far more dangerous, current estimations calculate that 120 million people may die from this newly discovered to which we have no immunity to them. All in all this situation is likely to get worse in the next couple of months and we should now focus our efforts on helping developing countries like India and also saving as many as we can, too carry on life if an unprecedented amount of people die.

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