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A Review on Swine Flu

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Abstract: *Swine flu has been creating a terror effects all round the globe and has been declared epidemic in most part of the world. 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. But H1N1 Virus is a new Swine flu Virus and it contains the genetic material of Swine flu, Bird, and human influenza virus. The 2009 Swine flu outbreak (pandemic) was due to infection with the H1N1 Virus and was first observed in Mexico. Symptoms of Swine flu in humans are similar to most influenza infections: Fever (100F or greater), Cough, Nasal secretions, Fatigue, Headache. The first confirmed case of Swine flu H1N1 in India was documented in May 2009, but huge number of cases were reported thereafter. In 2015, Swine flu outbreak in India had led to significant morbidity and mortality.In India the first case was identified on 2009 May in Hyderabad. Present study is an effort to reveal the predictors of mortality for better preparation to handle any such epidemics in future.The aim of this article is to bring awareness in general and know the consequences of the infection.*

Keywords: *H1N1, Influenza, Swine flu, Swine influenza, in Humans, H1N1, India.*

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I. Introduction

Swine influenza is a highly contagious acute respiratory disease of pigs caused by one of the several strains of Swine influenza A.

The Virus is spread among pigs by aerosols thorough direct and indirect contact and also by asymptomatic carrier pigs.

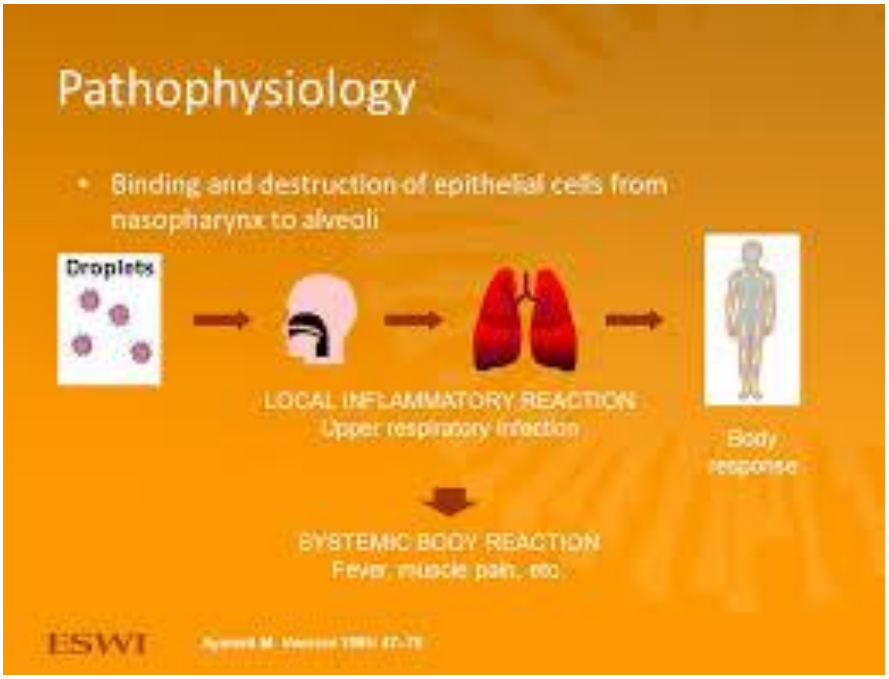
Transmission mainly occurs between pigs and humans.

The viruses are 80-120nm in diameter.

Of the 3 genera of Influenza viruses that cause human flu, two also cause influenza in pigs, with influenza virus A being common in pigs and influenza virus C being rare.

Symptoms include: Fever, lethargy, runny nose, sore throat, muscle pain, joint pain, lack of appetite, coughing, nausea, vomiting, and diarrhea.

Pathophysiology



H1N1 Swine flu is an acute disease that infects the upper respiratory tract and can cause inflammation of the upper respiratory passages, the trachea, and possibly the lower respiratory tract.
The known incubation period for H1N1 Swine flu ranges from 1to 4 days with the average around 2 days in most individuals,but some individuals, it may be as long as 7 days.
The contagious period for adults starts about 1 day before symptoms develop and lasts around 5 to 7 days after the person develops symptoms.
The contagious period may be longer in individuals with weakened immune systems and children (10 to 14 days).
The acute symptoms of uncomplicated infections persist for three to seven days, and the disease is mostly self-limited in healthy individuals, but malaise and cough can persist for up to 2 weeks in some patients.
Patients with more severe disease may require hospitalization, and this may increase the time of infection to around 9 to 10 days.
The body's immune reaction to the virus and the interferon response are the causes of viral syndrome which includes high fever, coryza and myalgia.
Patients with chronic lung diseases, cardiac disease and who are currently pregnant are at higher risk of severe complications such as viral pneumonia, superimposed bacterial pneumonia, hemorrhagic bronchitis and possibly death.
These complications can potentially develop within 48 hours from the onset of symptoms.
The replication of the virus occurs primarily in the upper and lower respiratory tract passages from the time of inoculation and peaks around 48 hours in most patients.

TREATMENT
There are four FDA approved antiviral drugs that are sometimes prescribed within the first day or two of symptoms to reduce the severity of symptoms and possibly the risk of complications.
These include.
1. Oseltamivir (TAMIFLU)
2. Zanamivir (RELENZA)
3. Peramivir (RAPIVAB)
4. Baloxavir (XOFLUZA)

INTERACTIONS OF XOFLUZA
Avoid co-administration with dairy products, calcium-fortified beverages, polyvalent cation containing laxatives, antacids, or oral supplements.
Eg: Calcium, Iron, Magnesium, Selenium, or Zinc.

May reduce efficacy of live attenuated influenza vaccines.

ADVERSE DRUG REACTIONS

Diarrhea
Bronchitis
Nausea
Sinusitis
Headache

Hypersensitivity reactions (Hives, Difficulty breathing, Swelling of lips, face, tongue, throat)
DOSE: 20mg, 40mg Tablets.
ADULTS: Start within 48 hours of symptom onset.
For greater than or equals to 12 years (40- less than 80 kg) : 40mg as a single dose.
For greater than or equals to 80 kg: 80mg as a single dose.
CHILDREN: Less than 12 years or less than 40 kg: Dose not established.

PRECAUTIONS
Potential secondary bacterial infections.
Treat appropriately Pregnancy, Nursing mothers.

XOFLUZA (NEW DRUG)
A new drug for the treatment of influenza was approved by the U.S Food and Drug Administration (FDA) in October 2018 just in time for the 2018-2019 flu season.
Baloxavirmarboxil (XOFLUZA) works against the two types of influenza virus that cause disease in humans, influenza A and influenza B
Baloxavir inhibits a subunit of the viral polymerase, the enzyme responsible for influenza virus replication.
Baloxavir interferes with the ability of the flu virus to multiply.
Baloxavir is also active against strains of AVIAN INFLUENZA (BIRD FLU).
Baloxavir is approved for the treatment of influenza in patients 12 and older who have been symptomatic for no more than 48 hours.

ADVANTAGES OF XOFLUZA
The main advantage of Baloxavir is that a single oral dose is effective.
Baloxavir was generally well tolerated.
Baloxavir rapidly reduced the concentration of influenza virus in respiratory secretions.
Patients who started Baloxavir within 24 hours of symptom onset had a greater benefit.

OSELTAMIVIR (TAMIFLU), (old drug)
These older drugs inhibit the virus by blocking a viral enzyme called NEURAMINIDASE.
These drugs interfere with the ability of the flu virus to spread within the body.
In patients ages 20 to 64 received single dose of Baloxavir (40 or 80 mg) depending on the weight of patient.
A Twice daily 75 mg dose of OSELTAMIVIR for five days.

ADVANTAGE OF OSELTAMIVIR
Oseltamivir is now available generically and may be less expensive than Baloxavir.

OSELTAMIVIR
Oseltamivir inhibits the neuraminidase enzyme which is expressed on the viral surface.
The enzyme promotes the release of virus from infected cells and facilitates viral movement within the respiratory tract.
In the presence of neuraminidase inhibitors, virions stay attached to the membrane of infected cells and are also entrapped in respiratory secretions.
Oseltamivir is licensed for the treatment of acute, uncomplicated influenza infection in patients older than 1 year of age who have been infected for no more than 2 days and for the prophylaxis of influenza in persons aged 13 years and older.
Its efficacy depends on the lag time between symptom onset and start of therapy.
DOSAGE
Treatment: 75mg PO BD 5 days within 48 hours of onset of influenza symptoms.
Prophylaxis: 75mg PO QD within 48 hours of exposure for atleast 7 days following close contact exposure or up to 6 weeks during a community outbreak.

	Tamiflu	**Xofluza**
Advantages	Available as an affordable generic Can be used in those as young as 2 weeks old Can be taken in tablet or liquid form Reduces flu symptoms by about a day Can prevent the flu	Only requires one dose Reduces flu symptoms by more than a day
Disadvantages	Can be hard on the stomach Requires dosing over 5 days	No generic available, so it can be expensive Patient must be 12 years of age or older to use it Pharmacies may not have it in stock since it is so newCannot prevent the flu

DRUG INTERACTIONS

Neuraminidase inhibitors are likely to reduce the replication and immunogenicity of intranasal live attenuated influenza vaccines.

Neuraminidase inhibitors do not impair the antibody response to injected, inactivated influenza vaccine,

ADVERSE DRUG REACTIONS

Nausea
Vomiting
Psychiatric effects
Renal adverse events in adults
Vomiting in children.

II. Conclusion

Oseltamivir is a well tolerated orally active neuraminidase inhibitor which significantly reduces the duration of symptomatic illness and hastens the return to normal levels of activity when initially promptly in patients with naturally acquired influenza. But NMA suggests that Baloxavir demonstrated better or similar efficacy results compared to other antivirals with a comparable safety profile. Baloxavir led to a significant decrease in viral titer versus Zanamivir, Oseltamivir, Peramivir and decreased viral shedding versus Zanamivir and Oseltamivir. Baloxavir one time dosing and ability to reduce the duration of the flu make Baloxavir an attractive option for many patients during flu season. Prevention and control measures for Swine influenza are based on our understanding of seasonal human influenza and consideration of potential modes of transmission.

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