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Opinion Article

An Overview on Characteristics and Transmission of Influenza Virus in Human Body

Meyang Shang*

Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan

DESCRIPTION

Influenza viruses are enveloped Ribonucleic Acid (RNA) viruses and belong to the family Orthomyxoviridae. This family of viruses includes the influenza A, B, and C viral types. Humans are typically infected by influenza A and B viruses; influenza A outbreaks and yearly epidemics are caused by influenza A viruses.

Hemagglutinin (HA), Neuraminidase (NA), and matrix glycoproteins are three crucial envelope glycoproteins found in the virus (M1 and M2). The viral attachment protein known as HA is what allows the virus to enter cells. It is a significant surface antigen to which antibodies that are designed to fight viruses are directed.

An enzyme called NA helps viruses propagate from cell to cell and is the target of the antiviral medications zanamivir and oseltamivir. While antibodies against NA can lessen the severity of illness, antibodies against HA are particularly protective against infection and disease. The structural component called matrix protein 2 (M2), which connects the viral envelope to the virus core, is crucial to the influenza virus' ability to spread. Eight strands of RNA make up the segmented genome of influenza viruses. This characteristic enables gene reassortment to take place among various influenza subtypes, facilitating the emergence of new subtypes. The nomenclature for the subtypes H and N of influenza viruses is based on differences in the structure of HA and NA between influenza virions (e.g. influenza A H1N1).

Antigenic shift and drift, a type of antigenic variation, has been used by influenza viruses to elude the immune system. Only influenza A viruses exhibit antigenic shift, which happens when novel subtypes of other nonhuman influenza viruses take the role of HA (sporadically NA) in these viruses. A pandemic or global epidemic, with the potential to result in millions of influenza related fatalities, is brought on by the introduction of a new HA into human viruses.

The accumulation of mutations in the HA, NA, or both antibody binding sites leads to antigenic drift. These modifications make it so that antibodies to past strains are ineffective against the current strain, allowing the disease to spread throughout a population that has only limited immunity. Both influenza A and B viruses can wander in their antigenic makeup. When considering strains for inclusion in yearly influenza vaccinations, antigenic shift and drift must be taken into account.

Small particle aerosols or droplets that enter the environment from an infected person spread influenza from person to person. The virus subsequently attaches to upper and lower respiratory tract epithelial cells. The incubation period from exposure to the illness often lasts two to three days, although it can last as little as one day or as long as five or more. Healthy individuals shed the influenza virus for 3 days to 7 days, while small children, who often have greater viral titers, may shed for 10 days to 14 days or longer.

CONCLUSION

Each winter through the beginning of spring, influenza strikes, causing severe morbidity and mortality in some high-risk groups. Up to 36,000 deaths each year in the United States are attributed to influenza, with persons over 65 accounting for more than 90% of fatalities. 5%-15% of children's upper respiratory tract illnesses are brought on by influenza.

Correspondence to: Meyang Shang, Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan, E-mail: shang_meyang@gmail.com

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