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IP Indian Journal of Immunology and Respiratory Medicine

Journal homepage: https://www.ijirm.org/

Editorial

Rise of the H3N2 influenza virus in India: ways to deal with it

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ARTICLE INFO

Article history:
Received 22-03-2023
Accepted 03-04-2023
Available online 03-05-2023

1. Introduction

Looking back in time, the Spanish flu in 1918–1919,[1] severe acute respiratory syndrome (SARS) in 2002–2003,[2] the flu in 2005,[1] the swine flu in 2009–2010,[1] the Ebola virus in 2014–2015,[3] and COVID–19[4] have all made headlines since 2019. The H3N2 virus first appeared in 1968, when it was known as the Hong Kong Flu (A/Hong Kong/1/1968 [HK/68]) or the Flu Pandemic that killed over one million people.[5] India is currently seeing the surge of the influenza A H3N2 virus.[6]

2. Influenza A H3N2 Virus

Influenza infects 5–15% of the world each year.[4] The influenza virus causes the flu. Influenza viruses are segmented enveloped negative-sense single-strand RNA viruses.[7] Influenza virus A, B, C, and D exist. Influenza A viruses can cause infection to birds, pigs, horses, and other animals, but B and C viruses only infect humans.[4] Influenza A and B viruses have eight RNA segments, which encode RNA polymerase subunits, viral nucleoprotein (NP), matrix protein (M1) and membrane protein (M2), the non-structural protein NS1 and nuclear export protein (NEP). Hemagglutinin (HA) and neuraminidase (NA) are surface glycoproteins of Influenza A viruses.[7] There are 18 HA subtypes (H1–18) and 11 NA subtypes (N1–11), but only H1N1, H3N2, and H3N3 circulate in humans.[7]

A novel H3 hemagglutinin and N2 neuraminidase from avian influenza A viruses comprised the virus. Antigenic shifts link the H3N2 and H2N2 viruses. H2N2 caused a 1957-58 pandemic. H2N2 virus hemagglutinin mutated to H3. The virus was weaker and killed fewer elderly individuals because it kept the N2 antigen, against which people had some immunity. However, it spread globally. H3N2 symptoms are still widespread. The H3N2 virus that caused the India pandemic has genetically evolved from the 1968 pandemic virus.

3. Viral Surge in India[6]

Nowadays, H3N2, SARS-CoV-2, and H1N1 infections are rising in India. India reported 3038 laboratory-confirmed cases of influenza subtypes, including H3N2, by March 9, 2023, according to Integrated Health Information Platform (IDSP-IHIP) statistics. The Ministry of Health reports 5,389 COVID cases with a 0.01% current burden as of March 18th, 2023. Also, it was stated that as of February 28, 2023, there were 955 H1N1 cases, with the majority occurring in Tamil Nadu, Maharashtra, Gujarat, Kerala, and Punjab. The union ministry reported 451 H3N2 variant instances from January 2 to March 5, 2023, with 2 deaths in Karnataka and Haryana. Assam's latest H3N2 case.

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https://doi.org/10.18231/j.ijirm.2023.001

4. Clinical Features of Influenza A H3N2

Symptoms of influenza A H3N2 is fever, body ache, fatigue, headache, cough, and sore throat. H3N2 causes more hospitalisations than other influenza viruses. Update of Ministry of Health and Family Welfare on seasonal flu reported that of hospitalised severe acute respiratory infections (SARI) patients with influenza A H3N2, 92% presented with fever, 86% cough, 27% breathlessness, 16% wheezing, 16% pneumonia, and 6% seizers. 10% of SARI patients who have H3N2 needed oxygen, and 7% required ICU care.[6]

5. How to Differentiate SARS-CoV-2, H3N2, and H1N1

The symptoms of viral respiratory diseases are generally quite similar. Clinically, it might be challenging to distinguish between the flu and COVID-19. Nonetheless, there are some characteristics that can be used to distinguish between them. Although COVID-19 symptoms begin with a fever or runny nose, H3N2 symptoms might result in hoarseness of voice. Body ache, or myalgia, is severe with the flu. The flu can cause a severe dry cough that lasts longer than usual (up to 3 weeks). A few of the distinctive COVID-19 symptoms that are unusual for influenza are loss of taste and smell, as well as skin rashes.

6. Who are at High risk

Although this affects people of all ages, children and adolescents under the age of 15 and older adults over the age of 65, pregnant women are more affected. If a person's immunity is low or they have another disease, the H3N2 influenza virus affects them more severely. The H3N2 flu virus is very contagious and causes more severe symptoms than other flu viruses, but it is not lethal. The symptoms of the previous flu were gone in 3–7 days, but the symptoms of H3N2 influenza last for about 15 days.

7. Diagnosis

A nasopharyngeal swab, an oropharyngeal swab, and a nasopharyngeal wash are all used to diagnose COVID-19 and swine flu.[5] There are also quick tests for the flu and COVID-19. Sometimes, the patient shows signs of both H1N1 and H3N2, and it could be mistaken for COVID-19. So, the next step is to get a COVID-19 test. Since the samples for both tests are collected at the same time, the H1N1 test will also cover H3N2 and a different COVID-19 test.

8. Management Strategies

As soon as people start seeing the initial symptoms of the viral infection, they should consult with doctor. In cases of high fever, wipe the whole body with a wet towel (whole body sponging), which will soon bring down the body temperature to a normal level. Paracetamol can also be taken in cases of high fever and body aches. It is advised to drink plenty of water, consume fluids, and keep the body hydrated. Stay away from the cold things. Take a steam inhalation at least twice a day.[8] To avoid influenza virus infection, include in the diet those things that increase immunity, such as turmeric, lemon, amla, green vegetables, fruits, etc. It is helpful in increasing the immunity of the body. Keep your distance from people who have a cough, cold, and fever; use a mask if you want to go near them.[9] Avoid going to crowded places. Keep in mind that whenever you touch something, wash your hands with soap. Adopt COVID-19-appropriate behaviour once again.[10] Neither spit in public nor eat together while sitting close to others. There is no role for antibiotics in this, as it is a viral infection not a bacterial infection, and also more antibiotic leads to resistance towards it. Children, patients suffering from chronic illnesses, and elderly people should get the tetravalent vaccine for the H3N2 influenza virus every year with the advice of their doctor. A single influenza vaccine will protect against H1N1, H2N2, and H3N2. Moreover, people should follow the guidelines related to seasonal flu and disease control released by local authorities.

9. Conflict of Interest

Authors declare no conflict of interest.

10. Acknowledgements

Authors are thankful to Indian Council of Medical Research (ICMR), New Delhi, India [No. 3/1/2/1(Env)/2018-NCD-I, dated 19/12/2018; for Senior Research Fellowship to AKP].

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Cite this article: Kant S, Pandey AK, Verma AK. Rise of the H3N2 influenza virus in India: ways to deal with it. *IP Indian J Immunol Respir Med* 2023;8(1):1-3.