H1N1 INFLUENZA: TIME TO ACT NOW BEFORE IT'S TOO LATE

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From ancient times mankind has suffered various pandemics and epidemics. Every time they pose a new challenge and are an acid test for the integrity of preparedness, health capacities, coping skills and decision making of the treating physicians and health policy makers. Limitations of scientific research, difficulties in information sharing, technical support issues, lack of co-operation among communities and public unawareness result in a significant morbidity and mortality.[1]

Since 2009, H1N1 influenza is a serious health issue worldwide. The virus responsible for (H1N1) is capableof mutations and changing its antigenic characteristics by the phenomenon of antigenic shift, antigenic drift and re-assortment. The resultant mutated or novel influenza A virus is termed as Influenza A (H1N1) and was first reported from Mexico. It is formed from combination of genes as derived from human influenza virus (one), avian (birds) influenza virus (one) and swine-origin influenza virus (two).[2] Moreover, this new virus has the capacity of producing a mutant (known as D225G) of haemagglutinin. This mutant is considered to have enhanced affinity for sialic acid receptors which are present in increased numbers in lower respiratory tract of humans and thereby associated with more severe illness.[3]

Although some may believe that H1N1 influenza is not more than just media havoc or a political controversy leading to disproportionate fear. However, evidence favors the deadliest nature of H1N1 influenza. There are reasons to believe that we must not underestimate the enemy. The spread of H1N1 influenza infection occurred promptly from Mexico to other countries of the world. It was declared as "public health emergency of international concern" by World Health Organization (WHO)in April 2009. Cases of H1N1 influenza were reported from almost all countries in March 2010. In laboratory-confirmed cases about 17,700 deaths were reported to the WHO.[4] H1N1 influenza virus has now become a global threat and continues to cause pandemics across geographical borders including the Indo-Pak sub-continent. H1N1is associated with severe pneumonia and increased mortality of 37.8 % as was shown by Khan et al.[5] Even in patients who have no underlying disease and those who had received oseltamivir treatment, the mortality was still high (30%).[6]

In contrast to seasonal influenza, H1N1 infection affects the young people of 20-40 years of age. Increased morbidity and mortality in this population is of paramount importance because morelife years are lost. If taken lightly, a large number of young critically ill patients can be expected who are occupying all intensive care beds at tertiary hospitals. Similarly pregnant women are at higher risk of developing more severe H1N1 infection with increased maternal and fetal mortality. Because of physiological and immunological changes, H1N1 infection during pregnancy can lead to circulatory imbalance, decreased ability to tolerate hypoxia, pulmonary edema and respiratory failure.[7] In addition, clinico-radiologically severe pneumonia, preexisting medical disease(s), delayed hospitalizations, timing of initiation of oseltamivir and necessitating ventilatory care are considered key predictors of mortality in H1N1 influenza.

The CDC criteria for suspected H1N1 influenza include onset of acute febrile respiratory illness within 7 days of close contact with a person who has a confirmed case of H1N1 influenza A virus infection, or who resides in a community or travel to a community where at least one H1N1 influenza case has been confirmed.[8] High index of clinical suspicion is needed. Preceding flu-like illness, hypoxia and decreased spo2, respiratory failure, bilateral mid and lower zone

involvement on chest X-Ray, multi-organ involvement and poor response to antibiotics should raise the possibility of H1N1 influenza.[9] Diagnosis can be confirmed by reverse-transcriptase polymerase chain reaction (rT-PCR) timely and with increased sensitivity.[10] Samples from the suspected patients should be taken from the deep nasal passages, nasopharynx, throat or, if available, bronchial aspirate. These should be sent to designated and specialized laboratories using viral transport medium (VTM).

Treatment of H1N1 influenza consists of early initiation of antiviral agents within 48 hours of symptom onset. Its efficacy is reduced when treatment is delayed. Although the virus is resistant to M2-inhibitors (amantadine and rimantadine) but still it is susceptible to neuraminase inhibitors(oseltamivir and zanamivir). Disease severity, length of illness and mortality can be reducedby use of Oseltamivir.[11] Due to the limited treatment options and limited supply of antivirals (especially in a resource constrained setting), their judicious use is the need of the day. That's how drug resistance and associated future complications can be avoided.[12]

Personal preventive measures can also be very effective and include frequent washing of hands, covering one's mouth and nose while coughing and sneezing and avoiding mass gatherings. Voluntary isolation can be considered by symptomatic individuals. These can be easily implemented at all levels in the communities and can prevent the spread of disease.[13]The media can play an important role by showing awareness programs to the general population and educating health professionals about the national guidelines. Influenza trivalent vaccine (H1N1 incorporated) is another major preventive strategy. It is available in few countries at present and efforts to produce it on large scale are underway. Therefore, we must identify high risk groups for vaccination which may include pregnant women, young adults, family contacts, healthcare and emergency staff.[14]

Having a plan in place is the key for pandemic preparedness. Most developed countries have already formulated their pandemic plans. We need to act now and take smart steps to be able to deal with the future (H1N1) pandemic and devise and further consolidate our pandemic plan. Now is the time for policy makers and stakeholders to exhibit a sense of urgency. Policies need to be developed with local communities in mind.[15]A comprehensive influenza research and evaluation program needs to be pursued. It can help in identifying new interventions and pandemic planning.[16]In this regard important parameters to consider include the incubation period (time between infection and symptoms), the serial interval (time between symptoms onset in primary case and secondary case), and the reproduction ratio/number (average number of secondary cases per primary case). These are fundamental for the feasibility and efficacy of intervention strategies against pandemic influenza.

In the wider interest of the nation, free and easily available facilities need to be provided regarding diagnostics of H1N1 influenza (nasopharyngeal or throat swabs, VTM, PCR kits), influenza vaccines, antiviral drugs (oseltamivir) and ventilators. Regionalinfection controlcenters need to be established or upgraded. In order to effectively combat future H1N1 influenza epidemics or pandemics, improvements need to be brought at all the levels regarding prevention, early diagnosis and timely treatment of H1N1 influenza.

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