

## SWINE FLU; AN EXPERIENCE AT A TERTIARY CARE HOSPITAL IN RAWALPINDI

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### ABSTRACT

**Objective:** To determine the cases of swine flu in a tertiary care hospital in Rawalpindi.

**Study Design:** Cross-sectional descriptive study.

**Place and Duration of Study:** This study was carried out at Combined Military Hospital Rawalpindi from December 2010 to February 2011.

**Patients and Methods:** The probable cases having a temperature more than 100°F or 37.8°C with cough or sore throat in the absence of a known cause other than influenza were referred by the consultant physicians to the clinical laboratory of this hospital for testing H1N1 by real time polymerase chain reaction (RT-PCR) on throat swabs. The throat swab samples were collected under the supervision of a consultant pathologist, the samples were immediately immersed in viral transport medium and RT-PCR was carried out at National Institute of Health Islamabad.

**Results:** During the study period a total of 89 cases were sampled, out of these 49 (55%) were males and 40 (45%) females. The age range was from 6 days to 73 years, representing an extremely skewed age distribution defying a reasonable summary measure. A total of 33 cases (37%) were positive. Three deaths of the positive cases with mortality of 9.09% was seen.

**Conclusion:** Swine flu has emerged as a new challenge to the whole world and an RT-PCR based positive rate of 37% marks the need for considering it in the differential diagnosis of influenza like illness.

**Keywords:** Real time polymerase chain reaction, Swine Flu.

### INTRODUCTION

Swine flu has emerged as a new challenge to medical science. In June 2009 the World Health Organization raised its pandemic alert to the highest level, i.e, phase 6, indicating the widespread community transmission of pandemic influenza A (H1N1) in at least two continents<sup>1</sup>. Pakistani population has also experienced the disease in the winter of 2009.

Signs and symptoms of swine flu are not different from those of a normal flu so it leaves the treating physicians in a dilemma for segregation of probable cases of swine flue. The confirmatory diagnostic test for the disease is Real Time Polymerase Chain Reaction (RT-PCR)<sup>2</sup>.

The objective of this study is to determine the frequency of swine flu in Pakistani

population based on confirmation by RT-PCR.

### PATIENTS AND METHODS

This cross-sectional descriptive study was carried out from December 2010 to February 2011 at Combined Military Hospital Rawalpindi. During the study period 170 probable cases of swine flu reported in the OPD of a senior classified (consultant) medical specialist, who after taking a detailed medical history and clinical examination referred the patients with fever (temperature of 100 degree Fahrenheit or 37.8 degree centigrade or more with cough or sore throat in the absence of a known cause other than influenza to the clinical lab for H1N1 RT PCR testing.

The throat swabs of all the cases were collected under the supervision of a pathologist. The swabs were immediately immersed in viral transport medium provided by BD (Becton, Dickinson and company UK) diagnostic system.

The samples were stored at minus 20 degree centigrade and were transported within 24 hours to National Institute of Health Islamabad in a

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special container maintaining the temperature at minus 10 degree centigrade. None of the samples proved to be unsatisfactory.

Data had been analyzed using SPSS version 15. Descriptive statistics were used to describe the results.

## RESULTS

Total number of cases tested for H1N1 virus were 89, out of these 49 (55%) were males and 40 (45%) were females. Age range was from 6 days to 73 years. Number of health care workers tested were 20, out of them 8 (40%) were positive. A total of 33 (37%) cases were positive for H1N1 on RT-PCR. There were three deaths (9.09%), one male and two females, the male was tested positive on a postmortem sample but the treating physician had strongly suspected swine flu, out of two females one was a 34 weeks pregnant lady who delivered a baby and died after 3 days of delivery and third was a 60 year old lady.

## DISCUSSION

Swine influenza was first proposed to be a disease related to human influenza during the 1918 flu pandemic, when pigs became sick at the same time as humans<sup>3</sup>. 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 causes of influenza among pigs in North America. In 1997–1998, H3N2 strains 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<sup>4</sup>.

In June 2009, the disease was detected in different countries in varying proportions. World Health Organization raised its pandemic alert to the highest level, phase 6, indicating widespread community transmission in at least two

continents<sup>1</sup>. The pandemic was declared over in August 2010<sup>5</sup>.

The case definition has been provided by the Centers for Disease Control and Prevention (CDC) of influenza like illness (ILI)<sup>6</sup> as fever of 100 degree Fahrenheit or 37.8 degree centigrade with cough or sore throat in the absence of a known cause other than influenza. The confirmed case of pandemic H1N1 influenza A is defined as an ILI with laboratory confirmed H1N1 influenza A virus detection by real time PCR or culture<sup>7</sup>.

The severity of illness has been defined as mild or uncomplicated, progressive illness and severe or complicated cases<sup>7</sup>. The mild illness is characterized by fever, cough, sore throat, rhinorrhea, muscle pain, headache, chills, malaise and some times diarrhea and vomiting, but no shortness of breath and little change in chronic health conditions<sup>2,3,7</sup>.

The progressive illness is characterized by typical symptoms plus signs or symptoms as chest pain, poor oxygenation (e.g, tachypnea, hypoxia, labored breathing in children), cardiopulmonary insufficiency (e.g., hypotension), CNS impairment (e.g., confusion, altered mental status), severe dehydration, or exacerbations of chronic conditions (eg, asthma, chronic obstructive pulmonary disease, chronic renal failure, diabetes, or other cardiovascular conditions<sup>7</sup>.

The severe or complicated illness is characterized by signs of lower respiratory tract disease (e.g hypoxia requiring supplemental oxygen, abnormal chest radiograph, CNS findings like encephalitis, encephalopathy, complications of hypotension like shock, organ failure, myocarditis or rhabdomyolysis, or invasive secondary bacterial infection<sup>7</sup>.

The most common presentation of our patients was fever, sore throat and muscle pains, the same were the complaints of the patients in spring of 2009 in New York City<sup>8,9</sup>. In contrast, approximately one third patients seen in Mexico had no fever at presentation<sup>10</sup>. Similarly, one third patients in multi center study in China also had no fever at presentation<sup>11</sup>. Pregnant women

and young children (< 5 years of age, and especially < 2 years of age) are at increased risk for influenza complications<sup>12</sup>. Severely immunocompromised hosts also an increased risk. Complications such as rapidly progressive pneumonia, respiratory failure, acute respiratory distress syndrome and multi-organ failure were reported during 2009-2010 influenza pandemic<sup>7</sup>. Bacterial super infection of the lung was reported in 4 to 29 percent of cases that resulted in hospitalization or death in USA, Argentina, Australia, and New Zealand<sup>13,14</sup>. Respiratory failure with ARDS and multi organ failure was the cause of death in our cases.

The CDC recommends RT-PCR as the method of choice for diagnosing H1N1<sup>12</sup>. This method allows a specific diagnosis of novel influenza (H1N1) as opposed to seasonal influenza.

Influenza spreads between humans when infected people cough or sneeze, then other people breathe in the virus or touch something with the virus on it and then touch their own face. "Avoid touching your eyes, nose or mouth-germs spread this way." Swine flu cannot be spread by pork products, since the virus is not transmitted through food. The swine flu in humans is most contagious during the first five days of the illness although some people, most commonly children, can remain contagious for up to ten days<sup>2-4</sup>.

Vaccines are available for different kinds of swine flu. The U.S. Food and Drug Administration (FDA) approved the new swine flu vaccine for use in the United States on September 15, 2009. Studies by the National Institutes of Health (NIH), show that if a person becomes sick with swine flu, antiviral drugs can make the illness milder and make the patient feel better faster. They may also prevent serious flu complications. For treatment, antiviral drugs work best if started soon after getting sick (within 2 days of symptoms). Besides antiviral, supportive care at home or in hospital, focuses on controlling fevers, relieving pain and maintaining fluid balance, as well as identifying and treating

any secondary infections or other medical problems. The U.S. CDC recommends the use of Tamiflu (oseltamivir) or Relenza (zanamivir) for the treatment and/or prevention of infection with swine influenza viruses; however, the majority of people infected with the virus make a full recovery without requiring medical attention or antiviral drugs<sup>8</sup>.

## CONCLUSION

Swine flu has emerged as a new challenge to the whole world. An RT-PCR based positive rate of 37 % is quite significant and stresses the need for considering this disease entity in the differential diagnosis of influenza like illness.

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