Mumbai doctors discover six potential Biomarkers for early detection of Swine Flu

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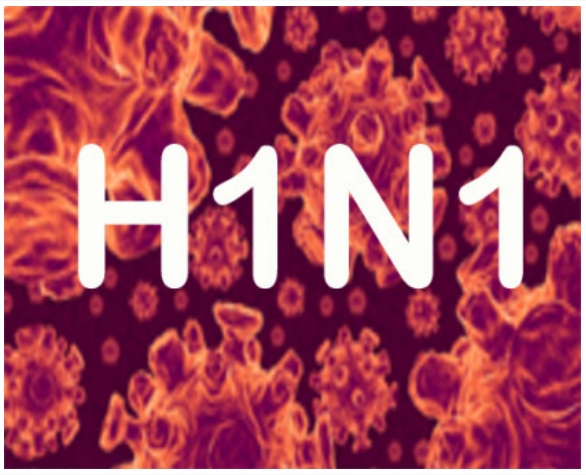

Mumbai: A six-member team of researchers have identified six potential biomarkers to detect H1N1 flue in nasal swab. The potential biomarkers are in the form of proteins that, if present in the sample, confirms the flu. This could be major aid in developing a test for the early stage detection of epidemic which occurs generally after monsoons and in winter in the country.

The diagnostic method in use presently, makes use of swab samples of the suspected swine flu or high-risk patients hospitalized with ongoing symptoms of breathlessness and co-morbidity and is put under the Real Time RT-PCR diagnostic test. The limitation of this test is the requirement of special infrastructure and the use of sophisticated instruments while in progress. This makes it difficult for hospitals or small pathological laboratories to conduct the tests. The samples are therefore sent to specialized laboratories available only in big towns.

Elaborating the research process, Professor Avinash Kale, one of the researchers at University of Mumbai-Department of Atomic Energy Centre for Excellence in Basic Sciences (UM-DAE CBS) told HT "We used nasal and throat swab samples of patients suffering from Acute Respiratory Illness (ARI). These swabs will contain a soup of proteins,".

"We took these nasal swabs, processed them, and isolated the proteins to identify biomarkers that are unique to swine flu and may therefore be used as diagnostic targets," he added.

The process took 200 nasal and throat swab samples that were already confirmed for swine flu during the 2009 pandemic using the RT-PCR method.Ten nasal swabs were collected from healthy people, to be used as controls.

Proteins from the collected swabs were then isolated and separated into two dimensions – pH (acidity) and size – through a method called 2-D gel electrophoresis. Comparison between the gels of healthy and infected patients was undertaken. A mass spectrometer was used for the secluded proteins which were placed in it for further testing. Following this, the team identified six potential protein biomarkers that are workable in the detection of swine flu.

Protein biomarkers indicate the physiological state as well as changes in the patient during various stages of the disease, in addition to identifying specific virus infection at an early stage.

"The results are preliminary, but encouraging," said Professor Abhay Chowdhary, head, department of microbiology, Grant Government Medical College and Sir J. J. Group of Hospitals. "No one can get rid of influenza since it's a tricky virus. But if we can detect specific proteins which are related to (swine) influenza, respiratory or bacterial infections through non-invasive methods that will help in early diagnosis before the disease flares up, patients can avoid the excess use of antibiotics."

Professor Kale told the daily that the next step is to repeat the studies for two consecutive H1N1 seasons and narrow down one or two protein markers that will help them design user-friendly diagnostic kit. “These can be made available to the health centres in remote locations.”

He also mentioned that this is the first report on respiratory proteome (entire set of proteins in an organism) profile in influenza patients.

The high-risk H1N1 Flu

A worrisome aspect of the swine flu is its quick endemic nature. First discovered in Mexico in 2009, and now having acquired a pandemic status, the flu spreads from person to person through air. Those most susceptible to it are senior citizens, pregnant women, children and those with compromised immunity.

“Swine flu has symptoms fairly common with bacterial infections such as sore throat and breathlessness. As a result, patients with H1N1 get treated with antibiotics that don’t work on viral infections,” said Kale.

The team comprises Professor Abhay Chowdhary, Grant Government Medical College and Sir J. J. Group of Hospitals, Professor Avinash Kale, Rahul Chavan Domnic Colvin from University of Mumbai-Department of Atomic Energy (UM-DAE) Centre for Excellence in Basic Sciences, Sandeepan Mukherjee and Dr. Ritwik Dahake from the Haffkine Institute.

SOURCE: WITH INPUTS

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