Researchers uncover information about RSV, its link to asthma

Every single child contracts respiratory syncytial virus at least once by age 3, yet until the last few years, RSV wasn't even on the radar for most doctors, and very little was known about how it works or what are its long-term effects.

Dr. Hasan Jafri, co-director of the Pediatric Pharmacology Research Unit at Children's, is part of a small team of researchers on the medical staff at Children's who are leading the race to develop accurate tests that will help RSV to be understood and fought at the molecular level.

Earlier this year, Dr. Jafri's team released the details of a new method they developed for testing for the presence of RSV. Their polymerase-chain-reaction test is approximately 1,000 times more effective than the previous gold-standard of culturing. The team has released several papers this year based on their results of using this more effective test to learn about the lasting effects of RSV.

"What our study has shown so far is that — at least in our mouse model — once you have developed RSV, you have it for life," Dr. Jafri said. "These are very exciting findings and very hot. No one had initially thought that there could be such a thing as a chronic infection with RSV."

Prior culture tests consistently showed that a week or two after RSV infection, the body was free of any infection. But the PCR test shows the RSV is present in the lungs indefinitely, even after apparent recovery. Dr. Jafri's team now is using their PCR to test for different strains of RSV so they can start evaluating whether different strands of RSV differ from each other in their long-term effects. They also are helping make PCR testing for RSV available to other labs around the world.

A critical problem with combating RSV is that because the body fails to build up any long-term immunities, a person can continue to suffer from the same strand of the virus; the body fights the virus just long enough to eliminate the initial symptoms before it stops producing antibodies. So every time an individual is exposed to RSV, it has the potential to come back in full force.

Dr. Hasan Jafri

"Now that we know that RSV always lingers in the body — even in the period between outward symptoms of RSV infection — we can start trying to answer the deeper question of 'could we actually treat asthma by treating RSV?'," Dr. Jafri said. "Our current work is focused in that direction, and the initial results are promising. The idea of being able to treat asthma by treating a virus is a very new and different paradigm."

Both locally and nationally, RSV is the most frequent cause of bronchiolitis and viral pneumonia in young children, resulting in more than 120,000 hospitalizations annually from lower respiratory tract infection. Severe lower respiratory tract infection associated with RSV greatly increases the risk of developing asthma, which itself is the most common cause of hospitalization for children of all ages. Children's alone cares for more than 1,000 children with RSV every year, and the numbers are rising. n