

Infections in childhood could provide clues to disease development in later life

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The interaction between infections and the microbiota during infancy in the lungs could help provide clues to disease development later in life, according to the findings of a new study.

Presenting her findings at the European Respiratory Society (ERS) International Congress today (27 September, 2015) Dr Insa Korten, from the University Children's Hospitals in Bern and Basel, Switzerland, will say that the interaction of human rhinovirus and the [microbiota](#) could aid in prevention of disease or the [development](#) of new therapeutic procedures.

The microbiota refers to all the bacteria that inhabit the human body for example in the gut, on the skin or in the lungs. The respiratory microbiota is known to be different in chronic lung diseases. However, its role in the development of disease is not yet understood. It is also known that early life viral infections are important for the development of respiratory conditions, such as asthma, later in life. However it is not yet known whether these two elements - early life virus infections and the microbiota - are linked.

Researchers studied the association between [viral infections](#) in the nose and the nasal microbiota during infancy. They included 32 otherwise healthy infants from the BILD (Basel Bern Infant Lung Development) cohort study and took a nasal swab every other week from the age of 5 weeks until the age of 1 year. In each sample, the microbiota and 12 different viruses were analysed.

Results showed that the bacterial diversity of the respiratory microbiota decreased when infants were infected with rhinovirus and showing symptoms. Conversely, asymptomatic [infection](#) with rhinovirus did not lead to reduced diversity of the microbiota. This suggested that when the immune system of the infant reacted with respiratory symptoms towards a rhinovirus infection in the nose, the normal variety of the

nasal microbial composition was reduced at the same time.

In addition, infants who experienced more frequent infections in the first year of life, had a lower [bacterial diversity](#) overall at the end of the study period, indicating that the normal variety of the microbiota was reduced by recurrent infections.

Dr Korten commented: "Our findings indicate an interaction between rhinovirus infections and the nasal microbiota in [early life](#) that persists over time. Although our findings need to be confirmed in other cohorts, the interaction of the virus and the microbiota could be of importance in future preventative or therapeutic procedures."

"We are already seeing this kind of approach with the gut, where patients are prescribed oral probiotics to stabilise the normal variety of the microbiota. If we find that these changes in the respiratory microbiota are linked with, for example, later asthma development, we could try to influence the nasal and respiratory microbiota as a preventive step. The immune response and the individual microbiota are shaped during the early years and this could therefore be best influenced during this period."

The next stages of the research will be to see how large the effect of viruses is in comparison to other influencing factors, such as nutrition or antibiotics. The research team will also follow-up with the children involved in this study at the age of 6 years to see how persistent the early changes in the microbiota were and how many children go on to develop asthma.

More information: Abstract: LATE-BREAKING ABSTRACT: Symptomatic rhinovirus infections are associated with a lower diversity of the nasopharyngeal microbiota in infants

Provided by European Lung Foundation

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