Dirt prevents allergy

November 2 2011

Oversensitivity diseases, or allergies, now affect 25 per cent of the population of Denmark. The figure has been on the increase in recent decades and now researchers at the Copenhagen Prospective Studies on Asthma in Childhood (COPSAC), University of Copenhagen, are at last able to partly explain the reasons.

"In our study of over 400 children we observed a direct link between the number of different bacteria in their rectums and the risk of development of allergic disease later in life," says Professor Hans Bisgaard, consultant at Gentofte Hospital, head of the Copenhagen Prospective Studies on Asthma in Childhood, and professor of children's diseases at the Faculty of Health Sciences, University of Copenhagen.

"Reduced diversity of the intestinal microbiota during infancy was associated with increased risk of allergic disease at school age, he continues. But if there was considerable diversity, the risk was reduced, and the greater the variation, the lower the risk.

"So it makes a difference if the baby is born vaginally, encountering the first bacteria from its mother's rectum, or by caesarean section, which exposes the new-born baby to a completely different, reduced variety of bacteria. This may be why far more children born by caesarean section develop allergies."

In the womb and during the first six months of life, the mother's immune defences protect the infant. Bacteria flora in infants are therefore probably affected by any antibiotics the mother has taken and any

artificial substances she has been exposed to.

"I must emphasise that there is not one single allergy bacteria," Professor Bisgaard points out.

"We have studied staphylococci and coli bacteria thoroughly, and there is no relation. What matters is to encounter a large number of different bacteria early in life when the immune system is developing and 'learning'. The window during which the infant is immunologically immature and can be influenced by bacteria is brief, and closes a few months after birth.

"Our new findings match the large number of discoveries we have also made in the fields of asthma and hay fever," Professor Bisgaard explains. Like allergies, they are triggered by various factors early in life.

The researchers gathered their data from a unique material consisting of 411 children whose mothers have asthma. This cohort was monitored, interviewed and tested continually from when the children were born 12 years ago, and the COPSAC group has published articles at regular intervals with new knowledge about allergy and asthma ever since.

Professor Bisgaard acknowledges the irony of something that used to be perceived as a threat to public health, namely bacteria, now turning out to be a fundamental part of a healthy life. He also points out that there may be other couplings, such as between intestinal flora and diabetes or obesity and other lifestyle diseases affecting modern man in the West.

"I think that a mechanism that affects the immune system will affect more than just allergies, he concludes. It would surprise me if diseases such as obesity and diabetes are not also laid down very early in life and depend on how our immune defences are primed by encountering the

bacterial cultures surrounding us."

Provided by University of Copenhagen