

Bacterial overgrowth could be major cause of stunting in children

Study may lead to new approaches for improving child health in low-income countries

Dhaka, February 17, 2016 – Excessive growth of bacteria in the small intestine could be damaging the gut of young children, leading to stunting, scientists from icddr,b, the University of Virginia and Virginia Commonwealth University have discovered.

Globally, 165 million children are stunted or short for their age, while in Bangladesh stunting affects 36 percent of children under 5. Being stunted increases the chance of both cognitive disability and death before the age of 5.

One possible factor contributing to stunting is damage to the gut – “environmental enteropathy” – leading to inflammation and poor uptake of dietary nutrients. The origins of environmental enteropathy are not clear, but excessive numbers of bacteria in the small intestine, referred to as small intestine bacterial overgrowth (SIBO), have been suggested as one possible cause.

To explore this idea, the researchers examined 103 two-year-old children who had been followed from birth in an urban slum in Mirpur, Dhaka. Despite vaccination, medical care, nutritional counselling and care, stunting increased in these infants from 9.5 percent at birth to 27.6 percent at 1 year of age.

Notably, one in every six two-year-old children tested showed signs of SIBO, as revealed by the presence of hydrogen in their breath, a result of bacterial metabolism of sugar to hydrogen in the small intestine. Importantly, bacterial overgrowth was more common in children showing stunted growth and was associated with gut inflammation.

“We knew that the children’s intestines were being damaged and that was associated with malnutrition, so we decided to test to see if this damage could be due in part to bacteria in their small intestine,” said Dr. Jeff Donowitz, lead author on the study. Donowitz is a paediatric infectious disease specialist at Virginia Commonwealth University and an infectious disease fellow at the University of Virginia School of Medicine, both in America.

“One of the things we are working on now is to see when small intestine bacterial overgrowth occurs as children grow up in urban slums and understand its contribution,” Donowitz added. “We suspect that SIBO at an early age leads to malnourishment.” By understanding what causes malnourishment, the international team of physicians and scientists hopes that it will become possible to treat and to prevent it.

Commenting on the study, Dr Tahmeed Ahmed, senior director, nutrition & clinical services division at icddr,b, said, “The findings certainly provide fresh knowledge about gut damage. However, it is important to know to what extent small intestine bacterial overgrowth is associated with stunting in order to identify ways to treat gut bacterial overgrowth and tackle stunting among children.”

Dr Rashidul Haque, co-author on the study and senior scientist, enteric and respiratory infections at icddr,b, said, “The study findings highlighted that growth faltering and poor sanitation are associated with SIBO. Discovering that SIBO was common and associated with intestinal damage highlighted to me the promise of treatment for SIBO to improve malnutrition therapies.”

The findings have been published in the journal mBio.

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Notes to editors

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