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Late Breaking Abstract - Gut microbiota maturity in infancy and atopic wheeze in childhood.

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Background

Emerging evidence suggest that accelerated maturation of the infant gut microbiota in late infancy may be protective against subsequent asthma. In the Barwon Infant Study (BIS), a more advanced maturation of the infant gut microbiota was associated with reduced risk of food allergy.

Objective/Hypothesis

We sought to examine the relationship between the maturation of the infant gut microbiota at 1 year and subsequent atopic wheeze in the BIS cohort.

Methods

In a birth cohort assembled using an unselected antenatal sampling frame (n=1074), faecal samples were collected at 1 month, 6 months and 1 year, and atopic wheeze at 1 year and 4 years was determined from parent-reported wheeze in the proceeding 12 months plus skin prick tests. We used 16S rRNA gene amplicon sequencing to derive amplicon sequence variants (ASVs). Among a random subcohort (n=323), microbiota-by-age z-scores (MAZ) at each time point were calculated using faecal ASVs to represent the gut microbiota maturation over the first year of life.

Results

Each standard deviation increase in MAZ at 1 year of age was associated with decreased odds of atopic wheeze at both 1 year (OR=0.51; 95%CI (0.36, 0.71); p<0.001) and 4 years of age (OR=0.52; 95%CI (0.31, 0.87); p=0.014)(FIG 1). There was no evidence of similar associations using MAZ at 1 or 6 months.

Conclusions

Advanced maturation of the infant gut microbiota in late infancy is associated with a reduced odds of atopic wheeze during early childhood.