ALLERGY, VITAMINS

VITAMIN D TRACES IN LATER LIFE

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This is basically an update of my 2017 Allergy paper where I asked about sequelae of early vitamin D supplementation.

> Two extensively examined hypotheses are the hygiene hypothesis (lack of protective bacterial exposure which leads to subsequent allergy) and the vitamin D hypothesis (early vitamin D supplementation sensitizes newborns against allergens) … The interesting question is: Are these concepts exclusive? … There is some preliminary evidence that – like many other environmental factors –vitamin D may modify the human microbiome.

Only yesterday a paper popped up during a presentation of Amelie Baud about the influence of social partners and the gut microbiome. This 2018 study tested gut microbial composition from 16S rRNA sequencing during the first year of life and subsequent risk of asthma in 690 participants

> 1-year-old children with an immature microbial composition have an increased risk of asthma at age 5 year … the microbial composition was not affected by maternal asthma status suggests that only susceptible children, exposed to inappropriate microbial stimulation during the first year of life, may express their inherited asthma risk …. The five most discriminating indicator OTUs for each cluster were identified for PAM cluster 1 as Enterobacteriaceae, Staphylococcus, Streptococcus, Bifidobacterium and Enterococcus, and for PAM cluster 2 as Faecalibacterium, Bacteroides(x3), and Anaerostipes … the risk of developing persistent asthma was increased (adjusted hazard ratio (aHR) 2.87 (1.25−6.55), P = 0.013) if the microbiome remained in PAM cluster 1 at age 1.

IMHO this doesn't look very much like direct microbiome effects but some colliding factor. The authors discuss cesarean section-birth and antibiotics as relevant factors while I wonder why the last author (who is a known pro vitamin D lobbyist) doesn't take into account

vitamin D here?

My 2017 review summarized only early results, where there are now many more robust studies like the 2019 Naderpoor study

there was a significant association between community composition and vitamin D supplementation at the genus level. The vitamin D group had a higher abundance of genus Lachnospira, and lower abundance of genus Blautia (linear discriminate analysis >3.0). Moreover, individuals with 25(OH)D >75 nmol/L had a higher abundance of genus Coprococcus and lower abundance of genus Ruminococcus compared to those with 25(OH)D <50 nmol/L.

or the 2020 Singh paper

Vitamin D supplementation significantly increased gut microbial diversity. Specifically, the Bacteroidetes to Firmicutes ratio increased, along with the abundance of the health-promoting probiotic taxa Akkermansia and Bifidobacterium. Significant variations in the two-dominant genera, Bacteroides and Prevotella, indicated a variation in enterotypes following supplementation.

So is the microbiome just an indicator of vitamin D exposure in genetic susceptible children?