

ORAL ABSTRACTS

1788. Detection of Gastrointestinal Parasites by Multi-Parallel Quantitative Real-Time PCR and Associations with Growth Delay in Early Childhood: Findings from a Birth Cohort in Rural Ecuador

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Background. Gastrointestinal (GI) parasites may have important influences on growth and nutrition in childhood. Previous studies investigating the effects of parasite infections on growth have tended to use poorly sensitive microscopic-based assays. To investigate the effects of single and multiple parasite infections on growth in young

children we analyzed data from a birth cohort study in Ecuador, correlating GI parasite affects on anthropometric measures.

Methods. Stool samples from a random sample of 400 children in the cohort were collected at 13, 24, and 36 months of age and analyzed using our rapid, high throughput multi-parallel quantitative real-time PCR (qPCR) for the 8 most common gastrointestinal parasite pathogens including the helminths, *Ascaris lumbricoides*, *Ancylostoma duodenale*, *Necator americanus*, *Strongyloides stercoralis*, *Trichuris trichiura* and protozoa, *Cryptosporidium parvum*, *Entamoeba histolytica* and *Giardia lamblia*.

Results. Each child had anthropometric data collected at the same time points including height, weight, head and abdominal circumference. The qPCR detected increased prevalence of infections for *Ascaris* at 13, 24, and 36 months (6.8%, 12.9%, and 15.5%, respectively). Similar results were seen for *Giardia* (31.5%, 44.5%, and 51.6%, respectively) and other parasites. Furthermore, children that were infected at a previous time point tended to be infected at subsequent observation times with higher concentrations of parasite DNA for *Ascaris* and *Giardia* (fg/ μ L, $p < 0.05$) For all parasites, qPCR was more sensitive than standard microscopic methods. GI parasite infections were associated with growth delays for all anthropometric parameters by comparison with WHO growth curves; growth of abdominal circumference was less in the infected group (1.5 cm) compared to the non-infected group (4 cm) ($p = 0.0054$).

Conclusion. We have deployed a high throughput, rapid, quantitative molecular based system that has improved diagnostic accuracy compared to stool microscopy. Our data also indicate that GI parasite infections may affect growth during the first years of life.

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