

Effect of antibiotic administration during infancy on growth curves through young adulthood in Rhesus macaques (*Macaca mulatta*)

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Recent human studies indicate a possible correlation between the administration of antibiotics during early life and the risk of later obesity, potentially due to antibiotic-induced alteration of the gastrointestinal microbiome. In humans, the risk of obesity increases with multiple courses of antibiotics and when fetuses or infants are treated with broad-spectrum and macrolide antibiotics. In addition, the obesity risk in humans seems higher for males than females. We used a retrospective, case-control, matched-pair study design to evaluate health records for 99 control-matched pairs of rhesus macaques (*Macaca mulatta*) from an outdoor breeding colony. We hypothesized that NHP treated with antibiotics prior to 6 months of age would have steeper growth curves than those who were not. However, in contrast to prior research with humans and mice, growth curves did not differ between antibiotic-treated and control animals. Differences between humans and NHP may have influenced this outcome, including the relative standardization of NHP environmental factors and diet compared with those of human populations, types of infections encountered in infancy and choice of antibiotic treatment, and the different relative maturity at 6 months of age in the 2 species. The results provide support for current standard medical practice in NHP and highlight a difference between macaques and humans that may influence future obesity research using macaques. Determining the basis for this difference might improve our understanding of the risks of early life antibiotic treatment and suggest mitigation strategies for treating infant illnesses without risking obesity.

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