Response to lipopolysaccharide in Octodon degus pups produces age-related sickness behavior but does not have effects in juveniles

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During vertebrate development, the immune function is inefficient and is mainly controlled by innate defense. While there have been detailed studies of various aspects of innate immune function, the effects of this function in the growth of vertebrates is still not well known. Similarly, there is little information regarding how early endotoxin exposure would affect juvenile phenotypes, specifically in a non-model mammal like a precocial rodent. We evaluated the response to an antigen and its cost in offspring of the rodent Octodon degus. We inoculated pups at 4 different ages (8, 15, 22 and 30 days after birth) with an antigen to determine the ontogeny and costs of the response to an endotoxin. We assessed changes in body mass, body temperature, sickness behavior and the levels of a key mediator of the inflammatory response, the cytokine interleukin-1?. We also determined the effects of early endotoxin exposure on the resting metabolic rate of juvenile animals (i.e. 90 days after birth). The cytokine levels, body mass and body temperature were unaffected by time of inoculation and treatment. However, pups subjected to inoculation at 22 days after birth with the antigen showed reduced locomotion. Juvenile resting metabolic rate was not affected by early endotoxin exposure. These results suggest that the magnitude of O. degus responses would not change with age. We discuss whether the lack of effect of the response on body mass or body condition is caused by environmental variables or by the precocial characteristics of O. degus.