2761 Maternal Campylobacter rectus Infection: Effects on Pup Survival and Neurodevelopment

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Previous studies by our group have shown that intra-chamber challenge of pregnant mice with Campylobacter rectus (C. rectus) results in an increase in fetal growth restriction and fetal resorption. In addition, signs of placental inflammation and structural damage were observed in challenged pregnant mice. We hypothesized that maternal bacterial challenge may increase the risk for neonatal morbidity and mortality.

Objectives: The objective of this study was to allow the pups from C. rectus-infected mice to be delivered and to monitor survival, growth and neurodevelopment.

Methods: A subcutaneous chamber infection model was used in timed pregnant mice. Seven dams received saline (control) and 7 were challenged with 10^8 CFU of C. rectus (strain 341) on gestation day 7.5. Mice were allowed to deliver, and litter size and pup birth weight were determined. Pup weight and development were followed until weaning time, and some of the pups were sacrificed on day 9 for histology.

Results: The litter sizes of the challenged and control groups appeared similar (4.6±2.8 and 5.1±1.4, respectively), as did the birth weights of the pups (1.42g ±0.17 and 1.41g ±0.17 respectively). The one-week pup survival was 3.8-fold lower in the challenged group than in the control group (p=0.032, Chi-square test). In addition, electron microscopy abnormalities in the periventricular hippocampal brain region including vacuolation and impaired myelination were seen in 9-day pups of challenged dams.

Conclusion: Mice challenged with C. rectus delivered pups with weights similar to those of the controls, but the one-week pup survival was significantly lower, suggesting impaired neonatal health. Furthermore, surviving pups demonstrated histological evidence of neurological damage consistent with human findings of maternal infection and neonatal periventricular damage. These findings suggest that maternal C. rectus infection may have long term negative impact on the health and development of surviving offspring. (Work supported by NIDCR-DE-01423.)

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