



Gestation reverses obesity-induced hepatic inflammation in mice

Ingvorsen, Camilla; Thysen, Anna Hammerich; Fernandez-Twinn, Denise; Ozanne, Susan E.; Pedersen, Susanne Brix; Hellgren, Lars

Publication date:
2013

[Link back to DTU Orbit](#)

Citation (APA):

Ingvorsen, C., Thysen, A. H., Fernandez-Twinn, D., Ozanne, S. E., Pedersen, S. B., & Hellgren, L. (2013). *Gestation reverses obesity-induced hepatic inflammation in mice*. Poster session presented at Joint Symposium of Centre for Fetal programming and Early Nutrition Consortium, Hellerup, Denmark.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Abstract for *Joint symposium of Centre for Fetal programming and Early Nutrition Consortium: Fetal and childhood programming, Preventing type 2 generations in the next generation*, Hellerup, 13/3-13. Poster award winner.

Gestation reverses obesity-induced hepatic inflammation in mice

Authors: Camilla Ingvorsen^{1,2}, Anna Hammerich Thysen¹, Denise Fernandez-Twinn³, Susan E. Ozanne³, Susanne Brix¹, Lars I. Hellgren^{1,2}

Presenting author: Camilla Ingvorsen

Affiliations: 1. Department of Systems Biology, Technical University of Denmark, 2. Centre for Fetal Programming, 3. Institute of Metabolic Science, University of Cambridge

Background: Maternal obesity is associated with increased risk of metabolic dysfunction in the offspring. It is not clear which physiological aspects of the obese state cause this metabolic programming. Obesity causes many metabolic changes but also chronic low-grade inflammation.

Objective: In this study, we determined if low-grade inflammation was present in obese dams compared to controls dams during gestation.

Methods: Female C57BL/6 mice were fed either a standard chow diet (3% fat) or a highly palatable obesogenic diet consisting of a high fat diet (22% fat) supplemented with sweetened condensed milk. After 6 weeks on the diets, half the mice (n=12) were sacrificed and the remaining half were mated and sacrificed on gestation day 18 (n=8). Blood and tissues were collected for analysis.

Results: Obesogenic diet increased adiposity ($p<0.0001$), adipocyte size ($p<0.0001$) and plasma leptin ($p<0.0001$) however, gestation had no effect on these parameters. There was also an increased hepatic lipid accumulation in obese mice ($p=0.05$). Body weight was increased in pre-gestating obese mice ($p<0.001$), but this difference was equalized by gestation. Insulin levels increased in the control dams during gestation ($p<0.01$), but this effect was absent in obese dams due to elevated insulin levels before gestation ($p<0.05$). Blood glucose levels were unaffected by diet or gestation. Local inflammation was assayed by macrophage count in liver and placenta. Hepatic macrophage count was increased by the obesogenic diet ($p=0.05$). Gestation reversed the infiltration, so obese dams showed lower macrophage count at the end of gestation compared to pre-gestating obese mice ($p<0.01$). Overall, hepatic macrophage count was decreased by gestation ($p<0.001$). Placenta macrophage count was unaffected by the diet.

Conclusion: Obese dams were found not to express increased inflammation in placenta and liver compared to lean dams, despite an incipient hepatic inflammation before gestation. Thus, obesity-induced inflammation is not maintained during gestation.