Stress during pregnancy and fetal brain development

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A considerable number of animal experiments suggest that stress during pregnancy may influence growth and structure of the fetal brain as well as offspring behaviour. In humans, stress during pregnancy has been linked to a smaller head circumference at birth, schizophrenia, homosexuality, depressive symptoms, and deviant child behaviour in the offspring. A number of methodological problems limit the conclusions that can be drawn based on these studies.

The aim of the thesis was to study the association between stress during pregnancy and indicators of fetal brain development in humans.

The experience of life events reported twice during pregnancy was the primary indicator of stress. In order to evaluate if this measure of stress was associated with a hormonal stress response, we studied a cohort of women, who had collected morning and evening samples of salivary cortisol twice during pregnancy. Stress was associated with a higher level of salivary cortisol in the third but not second trimester

In a follow up design the association between stress during pregnancy and head circumference at birth. There was no association between stress during pregnancy and head circumference at birth.

Handedness of the child was evaluated at the age of 3½ years and attention and hyperactivity problems at the age of 9-11 years. There was a dose response like association between stress in second trimester of pregnancy and mixed handedness as well as attention and hyperactive problems.

In future research, high priority should be given to prospective studies with long follow up time. One line of research should focus on the association between good quality measures of pregnancy stress and specific child behaviours, taking lifestyle factors and continous levels of parental psychopathology into account. Another line should focus on the combination of national registers to evaluate the association between pregnancy

stressors such as divorce, death of spouse, and unemployment with psychiatric diagnosis in the offspring into adulthood.

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