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Stress during pregnancy has detrimental effect on offspring

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Stress during pregnancy can have unfortunate consequences for children born under those conditions – slower development, learning and attention difficulties, anxiety and depressive symptoms and possibly even autism.

That such stress during a mother's pregnancy can cause developmental and emotional problems for offspring has long been observed by behavioral and biological researchers, but the objective measuring and timing of that stress and its results are difficult to prove objectively in humans, since the evidence is based to a large extent on anecdotal recollections and is also strongly influenced by genetic and other factors.

One researcher who has long wrestled with the problem of how to prove the connection between prenatal stress and its effects on offspring is Prof. Marta Weinstock-Rosin of the Hebrew University of Jerusalem School of Pharmacy, who in her experimental work with rats has been able to demonstrate that relationship in a conclusive, laboratory-tested manner.

"There is an enormous advantage in working with rats," says Weinstock-Rosen, "since we are able to eliminate the genetic and subjective element." The researchers were able to compare the behavior of the offspring of stressed rat mothers with those whose mothers were not stressed. They also were able to compare the results of administering various types of stress at different periods during the gestation process to see which period is the most sensitive for the production of different

behavioral alterations.

Weinstock-Rosin's work, along with that of colleagues from Israel, the UK and elsewhere, will be presented at an international conference, "Long Term Consequences of Early Life Stress," which she is co-chairing with Dr. Vivette Glover of the Imperial College, London, and that will be held at Mishkenot Sha'ananim in Jerusalem on October 29 and 30.

Weinstock-Rosin has been able to show through her laboratory experiments that when rat mothers were subject to stressful situations (irritating sounds at alternating times, for example), their offspring were later shown to have impaired learning and memory abilities, less capacity to cope with adverse situations (such as food deprivation), and symptoms of anxiety and depressive-like behavior, as compared to those rats in control groups that were born to unstressed mothers. All of these symptoms parallel the impairments that have been observed in children born to mothers who were stressed in pregnancy, she points out.

Further experiments by Weinstock-Rosin and her students have shown the crucial effect of excessive levels of the hormone cortisol that is released by the adrenal gland during stress and reaches the fetal brain during critical stages of brain development. Under normal conditions, this hormone has a beneficial function in supplying instant energy, but it has to be in small amounts and for a short period of time. Under conditions of excessive stress, however, the large amount of this hormone reaching the fetal brain can cause structural and functional changes. In humans, above-normal levels of cortisol can also stimulate the release of another hormone from the placenta that will cause premature birth, another factor that can affect normal development.

Weinstock-Rosin says that further experimental work is required in order to study possible other effects on the offspring resulting from

raised hormonal levels. What does seem to be obvious already is that avoidance of stress to as great an extent as possible is a good prescription for a healthy pregnancy and healthy offspring.

Husbands take note!

Source: Hebrew University of Jerusalem