Link found between morning sickness, smoking and healthy pregnancies

December 6 2017

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A link between the 'old wives' tale that morning sickness may indicate a healthy pregnancy, and the reason smoking is so detrimental has been found, according to a review published in the *Journal of Molecular*

Endocrinology. The article discusses the importance of the hormone endokinin for healthy pregnancies, its role in causing morning sickness, and how its normal function may be adversely affected by smoking, leading to poor outcomes in pregnancy.

Successful and effective implantation of the placenta is essential for a healthy pregnancy but how this is achieved remains to be firmly established. In particular, the role of peptide hormones and the placenta in causing morning sickness is unclear. In this article, Professor Philip Lowry and Dr Russell Woods from the University of Reading review the critical roles that peptide hormones have in ensuring successful implantation of the placenta, discuss how endokinin can indirectly lead to the development of morning sickness symptoms, and how its normal hormone function can be impaired by smoking.

Endokinin is a peptide hormone found throughout the body that can affect blood supply to organs locally. Placental endokinin, even at low levels, appears to be capable of improving local blood flow, which is a key factor for ensuring successful implantation. Endokinin also acts on the brain to induce nausea and vomiting. This is why drugs that block the actions of endokinin in the brain are often used to treat nausea associated with chemotherapy. Furthermore, recent data indicates that tobacco smoke also influences lung endokinin levels.

Since hormones like endokinin are transported in the blood, they can also affect functions in other parts of the body and this is the basis of the link between morning sickness, pregnancy and smoking. Increases in endokinin levels during pregnancy that ensure good placental blood flow can also overspill and activate the brain areas that cause morning sickness symptoms. Similarly, the nausea experienced by non-smokers on inhaling tobacco smoke may be due to raised levels of endokinin in the lungs also activating those brain areas. Given that smoking during pregnancy is well known to lead to poor placental implantation, this

suggests that impaired endokinin activity may be involved.

Prof Lowry suggests, "It is feasible that the regular release of lung endokinin into a mother's blood from smoking adversely affects the normal local response to placental endokinin, which is needed to ensure a healthy pregnancy."

Prof Lowry cautions, "There may be a temptation to use endokinin blocking drugs to treat morning sickness during pregnancy but these findings suggest that such drugs could affect the health of the pregnancy and must be avoided."

Prof Lowry concludes, "I hope that this article will give some psychological relief to pregnant women suffering from morning sickness , but will also persuade smokers who are intending to have a baby to kick the habit well beforehand."

More information: "The placenta controls the physiology of pregnancy by increasing the half-life in blood and receptor activity of its secreted peptide hormones." *Journal of Molecular Endocrinology* on 7 December 2017.

Provided by Society for Endocrinology