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Low thyroid hormone levels during late pregnancy associated with a higher risk of assisted delivery

Scientists have found a link between the level of thyroid hormones in expectant mothers during late pregnancy and the way in which the foetus is presented at birth. The research published in *Clinical Endocrinology* shows low levels of thyroid hormone are associated with an increased risk of abnormal foetal presentation at birth resulting in an increased risk of assisted delivery.

Thyroid hormone levels in the mother are crucial for development of the foetus throughout pregnancy. Thyroid dysfunction during pregnancy can cause premature delivery, increased rates of miscarriage and increased risk of the baby being born in a breech position¹. In up to 95% of births, the foetus is presented in a head down position, with the breech against the mother's stomach, which is the most efficient way for a birth to proceed². When labour starts with the head downwards, the face of the baby is normally directed to the back of the mother. All other head positions (for example, face directed to the belly) are abnormal head positions and can lead to complications and increased risk of assisted delivery, due to a lack of rotation of the head during labour.

Low thyroid hormone levels in the mother during pregnancy have been linked with reduced motor skills in children.^{3,4} This led the authors of this study to hypothesise that maternal thyroid hormone levels could also affect mobility of the foetus and therefore its position at birth. Researchers, led by Professor Victor Pop from the University of Tilburg in The Netherlands, looked at the association between levels of thyroid hormones and foetal position at birth in 960 healthy pregnant Dutch women with normal thyroid function and with a head down foetal presentation at 36 weeks of gestation. Women that presented with the foetus in the normal head-down (face directed to the mother's back) position (n=891) had significantly higher levels of the thyroid hormone T4 than those with abnormal foetal head presentation (n=69, p=0.02). The authors went on to show that the lower the levels of T4 thyroid hormone in the mother at 36 weeks of pregnancy, the higher the risk of abnormal foetal head presentation and risk of assisted delivery.

These results show for the first time an association between T4 thyroid hormone levels in the mother during late gestation and position of the foetus at birth. The authors speculate that in mothers with impaired thyroid function, movement of the foetus could be restricted leading to

abnormal foetal presentation and an increased chance of assisted delivery. More research is now needed to understand the mechanisms underlying this relationship.

Researcher Professor Victor Pop said:

“The link between thyroid dysfunction during pregnancy and difficulties during labour is well established. However, to our knowledge, this is the first study to show an association between maternal thyroid hormone concentration during late gestation and foetal head position in healthy pregnant women with normal thyroid function.

“We believe that the relationship between thyroid hormone levels and foetal presentation at birth may be explained by recent findings that motor development in children is related to low maternal thyroid hormone concentration during pregnancy. It follows that impaired maternal thyroid function could also influence foetal motility and therefore rotation of the foetus during labour. We now need to carry out further studies to examine the relationship between maternal thyroid function and foetal presentation at birth in more detail.”

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Notes for editors:

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- (2) Cunningham et al., 2005. *Williams Obstetrics*, 22nd edn. McGraw-Hill, Columbus, OH.
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ABSTRACT

Maternal thyroid hormone concentration during late gestation is associated with foetal position at birth

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Objective

To evaluate whether there is an association between maternal thyroid hormone and foetal cephalic head position at term gestation.

Context

Rotation and flexion of the head enables the foetus to negotiate the birth canal. Low-normal range thyroid hormone concentrations in euthyroid pregnant women constitute a risk of infant motor abnormality. We hypothesized that low normal maternal thyroid hormone levels are associated with increased risk of abnormal foetal position at delivery.

Design

In 960 healthy Dutch women with term gestation and cephalic foetal presentation, thyroid parameters [foetal T4 (FT4), TSH and thyroid peroxidase antibody] were assessed at 36 weeks of gestation, and related to foetal head position (anterior cephalic vs. abnormal cephalic) and delivery mode (spontaneous vs. assisted delivery).

Results

Women presenting in anterior position (n = 891) had significantly higher FT4 levels at 36 weeks of gestation than those with abnormal cephalic presentation (n = 69). There were no between-group differences for TSH. Regression analyses indicated that the risk of abnormal head position decreased as a function of increasing FT4 [single odds ratio (OR) = 0.87, 95% confidence intervals (CI) 0.77–0.98; multivariate OR = 0.88, 95% CI 0.72–0.99]. A similar inverse relationship between maternal FT4 and risk of assisted delivery was obtained (OR = 0.86, 95% CI 0.79–0.95; OR = 0.91, 95% CI 0.84–0.98).

Conclusion

The lower the maternal FT4 concentration at 36 weeks of gestation, the higher the risk of abnormal cephalic foetal presentation and assisted delivery.