Smoking during pregnancy may damage daughters' future fertility

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Baby girls, born to mothers who smoked during pregnancy, exhibit signs of increased testosterone exposure, which may affect their hormone and reproductive function, according to research presented today at the 58th

Annual European Society for Paediatric Endocrinology Meeting. The findings of this study suggest that cigarette is an endocrine disruptor that can masculinise girls in the womb and that daughters of women that smoked during pregnancy may suffer from hormonal and reproductive health problems in the long-term.

Smoking during pregnancy is widely known to be bad for the health of both mother and baby, yet some women persist and many are exposed to second-hand smoke. In addition to the many toxins present in cigarette smoke, it is also suspected of having endocrine-disrupting properties that may increase testosterone levels. Baby girls exposed to higher levels of male hormone, testosterone, in the womb are at greater risk of abnormal development and long-term negative effects on their fertility and metabolism. Anogenital distance (AGD), the distance from the midpoint of the anus to the genitalia, is regulated by testosterone levels during foetal development, so is a sensitive marker of testosterone exposure and life-long reproductive health.

In this study, Dr. Deniz Ozalp Kizilay and colleagues at Cigli State Training Hospital in Turkey, measured the AGD in 56 newborn girls and 64 newborn boys, from mothers who smoked during pregnancy. AGD was significantly longer in the baby girls and correlated with the amount the mothers smoked. No effect was found on the AGD in the boys.

Dr. Kizilay states, "This significant increase in AGD in girls exposed to maternal smoking may be an indicator of excessive testosterone exposure that poses a risk for short and long-term health problems, including metabolism and fertility. Further investigation is needed to explain the relationship between maternal smoking, increased AGD and future health issues in girls."

Although Dr. Kizilay, cautions, "The mechanisms behind the potential reproductive problems caused by exposure to cigarette smoke in the

womb are not fully understood. Our results do suggest that girls have higher testosterone exposure but not how this relates to reproductive function. More extensive and carefully-designed studies are required to explain this relationship."

The team now plan to monitor the long-term effects of exposure to higher testosterone levels caused by smoke exposure in the same group of baby girls, to assess how this may affect their future health and fertility.

Dr. Kizilay comments, "To our knowledge this is the first time that the unfavourable effects of prenatal smoke exposure on AGD, as a marker of testosterone exposure, has been demonstrated in female newborns. These findings are a valuable contribution to our better understanding of the intergenerational effects of maternal smoking."

More information: The study "Prenatal smoke-exposure is associated with increased anogenital distance in female infants" will be presented by Dr Deniz Özalp Kızılay on Friday 20 September (abstract LB-14), at the 58th Annual European Society for Paediatric Endocrinology Meeting in Vienna, Austria.
www.eurospe.org/meetings/2019/espe2019/programme/

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