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Environmental Tobacco Smoke and Risk of Spontaneous Abortion

The study adds weight to the view that exposure to environmental tobacco smoke could be associated with an increased risk of early, spontaneous abortion.

Spontaneous abortion is not an outcome with a recognised link to exposure to environmental tobacco smoke (ETS).

This study was of a case control design. Cases (n = 463) were pregnancies which spontaneously aborted between 6 and 12 weeks gestation; there were 864 controls with full term pregnancies including a relevant proportion of women who were planning an abortion at the relevant time.

Exposure was assessed by means of cotinine levels in blood samples. Active smoking was defined as a level greater than 15 ng/mL. Smoke free was defined by a level lower than 0.1 ng/mL.

24% of cases were found to be exposed to ETS compared with 19% of controls. Spontaneous abortion in this time period was much more likely in women over age 35, who had had many complete and incomplete pregnancies and who consumed a much higher daily dose of caffeine. Controls were more likely to suffer morning sickness.

The authors identified that women with high risk pregnancies were more likely to be free of morning sickness and therefore more active and more likely to encounter ETS. They found this to be an unlikely explanation for the higher exposures among this group.

The effect of ETS on whether or not the foetus was of a healthy genotype was also explored. It was observed that spontaneous abortion with ETS exposure was more likely if there was a genetic abnormality in the foetus.

The relative risk of spontaneous abortion was increased for women exposed to ETS; OR = 1.7 (95% CI = 1.2 to 2.4) and for women who smoked; OR = 2.1 (95% CI = 1.4 to 3.3).

Comment

The study was unusual in that it made objective measurements of ETS exposure. It also attempted to correct for very probable confounders such as the effect of pregnancy on maternal behaviour and the effect of genetic health of the foetus. A weakness was that exposure assessment was only made on one occasion and for cases this was at a time of medical intervention.

In our view the study highlights the importance of assessing genetic health of the foetus and maternal behaviour. A genetically unwell foetus may be more likely to fail to ward off the effects of ETS exposure and could be associated with maternal tolerance of uncomfortable surroundings. This aspect of the research should be more thoroughly explored in future studies.

The study increases the confidence that ETS exposure is associated with early spontaneous abortion.