Lengthy time to conception and fertility treatment might affect child's asthma risk

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Children whose parents take more than a year to get pregnant and who use fertility treatment may be at heightened risk of developing asthma, suggests a large population-based study, published online in the journal

Thorax.

And this risk seems to rise in tandem with the number of previous miscarriages early in the mum's pregnancy, suggesting that common factors underlying poorer (sub) fertility and recurrent miscarriages might be influential, say the study authors.

Previous research suggests that children conceived with the aid of fertility treatment, known as assisted reproductive technologies, or ART for short, may be more prone to asthma.

But it's not clear whether it's the ART procedures themselves or as yet unidentified factors associated with subfertility that might be behind this heightened risk.

To try and find out, the researchers linked birth and prescription data from national Norwegian health registries (involving 474,402 children born between 1998 and 2009) and from the Norwegian Mother and Child Cohort Study (75,797 children).

The data included information on fertility treatment; time to conception; number and timing of any previous miscarriages; and potentially influential factors, such as maternal age, asthma, smoking during, and weight before, pregnancy.

Childhood asthma was defined as use of asthma drugs in the preceding 12 months when the child was 7 years old.

Just over 4 per cent of children in the registries group (20,189) and mother and child study (3229) had asthma.

Children in the registries group had more risk factors for asthma than those in the mother and child study: they were more likely to have been

born early or small; and to have younger mums, who smoked and had asthma themselves.

But children in either group who had been conceived with the aid of fertility treatment were up to 42 per cent more likely to have asthma.

When these children were compared with those whose parents had spontaneously conceived after more than 12 months, they were 22 per cent more likely to have asthma.

This suggests that poorer fertility doesn't by itself completely explain the observed heightened asthma risk among children conceived with the aid of fertility treatment, and that aspects of ART itself may have a role, say the researchers.

The number of previous miscarriages was also associated with an incrementally heightened risk of asthma, rising from 7 per cent for one, to 24 per cent for three or more, although this was only observed for miscarriage during the first 12 weeks of pregnancy.

This is an observational study, and as such, can't establish cause. More research is required, but their findings echo those of previous studies, say the researchers.

And there are potentially plausible explanations. Several procedures involved in ART might affect the embryo and natural course of fetal development: for example, the drugs used to induce ovulation and maintain the pregnancy; the freezing and thawing of fertilised embryos; the hormonal environment; and embryo manipulation, they suggest.

And the immune system might also have a role. "We propose that common immunological mechanisms might plausibly underlie the increased risk of asthma we observed both among children of mothers

who suffer from subfertility and miscarriages, since immunological mechanisms contribute both to problems conceiving and repeat pregnancy losses," they write

In a linked editorial, Dr. Peter Gibson, of John Hunter Hospital, Newcastle, Australia, concurs, and points out that the possible interactions leading to increased asthma risk are complex.

But while the "effect sizes are modest, their importance comes from the relatively high prevalence of both asthma and subfertility and the potential to modify these risk factors," he emphasises.

"Preventing childhood asthma must be one of the big goals of respiratory medicine," he concludes.

More information: *Thorax* (2018). thorax.bmj.com/lookup/doi/10.1 … horaxjnl-2018-211886

Thorax (2018). thorax.bmj.com/lookup/doi/10.1 … horaxjnl-2018-212598

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