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Acetaminophen (Tylenol®) use in Pregnancy and Neurodevelopment in Children

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Clinical Scenario

I'm 20 weeks pregnant, when I was 9 weeks pregnant, I was sick and took Tylenol® (acetaminophen) for fever. I just saw a post on social media that taking acetaminophen in pregnancy can cause autism and attention deficit hyperactivity disorder (ADHD) in children. Should I be worried?

Q. What is acetaminophen used for?

A. Acetaminophen (also known as paracetamol in other countries) is the active ingredient in Tylenol®. It is used to treat fever (anti-pyretic) and pain (analgesic).

Q. What causes autism and ADHD?

A. Autism and ADHD are neurodevelopmental disorders (NDDs). There is no single cause that has been found, and it is thought that a combination of factors plays a role in their development. Genetics plays a large part, explaining 70-90% of cases of autism, but even this is complex with over 800 genes potentially implicated. The specific cause of autism and other neurodevelopmental disorders is an area of ongoing research.

Q. I heard in the news that there is recent study that suggested that taking acetaminophen in pregnancy increases the risk of autism, ADHD or other neurodevelopmental disorders (NDDs) in children. Can taking acetaminophen during pregnancy cause these disorders in children?

To answer this question we need to provide some background information:

The best way to determine if a medication causes a problem is doing a randomized controlled trial. Randomized trials are designed to establish causation (such as exposure to medication causing the effect). Such a study has never been done to examine the safety of acetaminophen in pregnancy. So, we use “observational studies” to try to understand if acetaminophen does or does not contribute to the risk.

Observational studies are designed to examine if there is an association (link) between two things. However, even if an association exists, it does not prove cause-and-effect. Just because a study sees an association between use of acetaminophen in pregnancy and NDDs does not mean that acetaminophen is the cause of the NDD. There could be other factors causing this association.

A. There have been several observational studies that have attempted to determine if acetaminophen use in pregnancy increases the risk of NDDs. However, many of the studies have flaws in the study design (methodology) that affect the results. One such design flaw is not properly accounting for factors (called confounders) that are known to increase the risk for NDD (e.g. certain health conditions, genetics).

The best designed observational studies on this topic do not show an increased risk of NDDs with acetaminophen use. In some of the studies that initially reported an association, once some of the confounders were accounted for, the association disappeared or became weaker. This would not happen if acetaminophen was truly causing the NDD.

While some of the studies do attempt to address confounders such as maternal health conditions, others such as environment, and paternal and familial (genetic) factors are rarely properly addressed - yet genetic/familial risk is the single biggest known risk factor for autism and ADHD.

Q. What if I have pain or fever? Can I take acetaminophen?

A. Yes you can. The Society of Obstetricians and Gynaecologists of Canada (SOGC) considers acetaminophen to be the treatment of choice for pain and fever during pregnancy.

It is important to treat fever in pregnancy. Fever in pregnancy is associated with an increased risk of birth defects, and other adverse effects.

It is recommended to take the lowest effective dose, for the shortest length of time.

Q. What if I need longer term pain management?

A. More research is needed to fully understand the safety of using acetaminophen over long periods during pregnancy. There may be other factors and interactions that affect outcomes. If you are dealing with chronic pain, talk to your healthcare provider to create a safe and effective plan.

Key References

For a complete list of references, please visit our website at firstexposure.ca/acetaminophen_and_neurodevelopment/

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If you do not have a healthcare provider, please go to: firstexposure.ca/how-to