Popular pain killer linked to behavioural disorders

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Research at the University of Auckland has reinforced the discovery of a link between mothers taking a common pain killer during pregnancy and their children developing behavioural problems.

The study led by Senior Research Fellow, Dr John Thompson replicated and extended a Danish study published earlier this year that found Acetaminophen (marketed as Paracetamol) taken during pregnancy increased the risk of attention deficit hyperactivity disorder (ADHD) symptoms in their offspring.

ADHD is the most common neurodevelopmental disorder among New Zealand school age children, affecting five to ten percent, and it is characterised by inattention, hyperactivity and impulsivity.

The Auckland study involved participants from the Auckland Birthweight Collaborative Study (ABCS), a longitudinal study that began in 1995. Due to dropout rates during the latter stages of the ABCS, it only followed up on infants of European descent including those born small for gestational age.

Drug use during pregnancy (of acetaminophen, aspirin, antacids, and antibiotics) was analysed in relation to behavioural difficulties and ADHD symptoms measured by parent report at age 7 and both parent- and child-report at 11 years of age. The analyses included multiple covariates including birth weight, socioeconomic status and antenatal maternal perceived stress.

"Acetaminophen taken as Paracetamol was used by 49.8 percent of the study mothers during pregnancy," says study leader Dr John Thompson. "We found significantly higher total difficulty scores, (as measured in the Strengths and Difficulty Questionnaire (SDQ) parent report at age 7 and child report at age 11), if acetaminophen/Paracetamol was used during pregnancy, but there were no significant differences associated with any of the other drugs."

The children of mothers, who used acetaminophen/Paracetamol during pregnancy, were also at increased risk of ADHD at 7 and 11 years of age, (using the revised Conners' Parent Rating Scale).

"These findings strengthen the contention that acetaminophen/Paracetamol exposure in pregnancy increases the risk of ADHD-like behaviours," says Dr Thompson. "Our study also supports earlier claims that findings are specific to acetaminophen/Paracetamol."

"The finding that even low doses of acetaminophen/Paracetamol (indicated by the number of weeks of drug exposure) can affect behaviour seven years later is alarming because it is the most commonly used antenatal drug," he says in the report.

"Understanding the biological mechanism underlying the acetaminophen-behaviour link would likely take precedent in further research, in tandem with efforts to inform the public of the newly identified risks of this commonly used over-the-counter drug."

The results of the study found significantly higher total scores on all SDQ formats if acetaminophen/Paracetamol was used during pregnancy, but there were no significant differences with any of the other drugs.

The acetaminophen/Paracetamol group had poorer scores at each age for all difficulty scales, especially in the areas of inattentive symptoms at

seven years old and with hyperactive impulsive sores at 11 years old.

Particularly problematic at age seven were parent reported emotional and conduct problems, and at age 11, were child-reported conduct and hyperactivity/inattention problems.

"Self-reported problem behaviour has been shown to be a more valid indicator of mental and physical health than parent-reported problems," says Dr Thompson. "It is also well known that ADHD is a complex disorder and it could be that other, more positive and enriching environmental exposures begin to dilute the neurological outcome of Paracetamol over time."

He says the study did not have data relating to ADHD symptoms in puberty, nor did they have information on dosage of acetaminophen use or in which trimester it was used.

"Early life acetaminophen/Paracetamol exposure may be significant determinants of ADHD at higher doses of the pain killer," he says. "And other environmental factors not measured may also modify disease risk and neurological outcomes."

"More research is needed to provide a more precise assessment of the risk and consequences of taking this pain killer during pregnancy," says Dr Thompson.

Provided by University of Auckland