Does Synthetic Oxytocin (Pitocin) Cause Autism?

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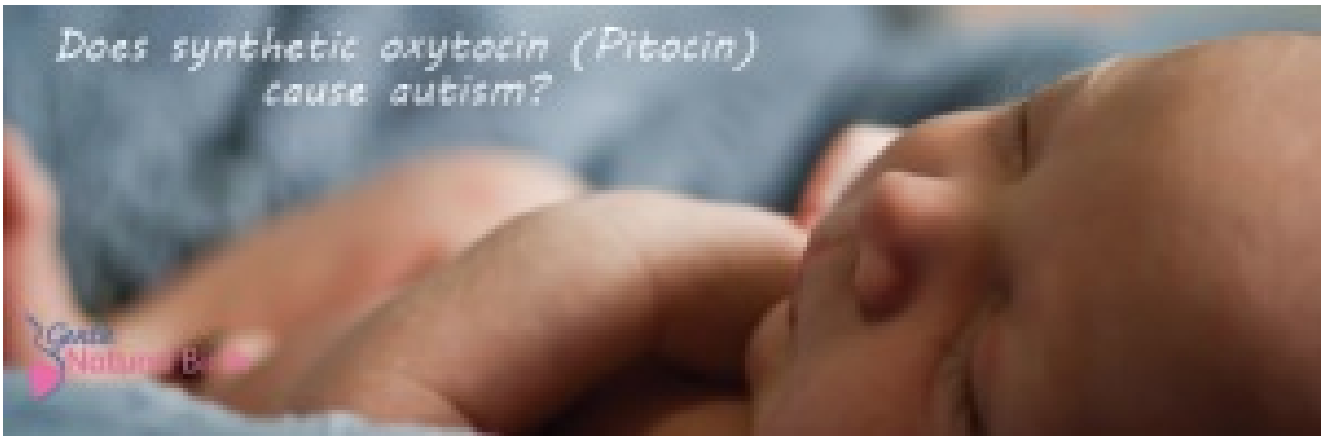

Does exposure in labour to synthetic oxytocin (Pitocin, Syntocinon) cause autism? Or could exposure at least increase the risks of an autism spectrum condition, including milder forms of autism, for genetically vulnerable children?

This question has been asked for many years, beginning with natural birth pioneer and surgeon Michel Odent in the 1980s. Dr Odent noted similarities between the social behaviours that autistic individuals tend to have (reduced eye contact and reading of social cues) and the functions of our brain-based oxytocin system, which helps us with social behaviours, among other effects.

These concerns have been echoed by many researchers, who have wondered: Could exposure to synthetic oxytocin at this vulnerable time impact the baby's developing oxytocin system? Could it disrupt oxytocin receptors, or mis-set the oxytocin system in other significant ways, with long-term effects? Could this even explain the worldwide increase in autism diagnosis among our children?

A recent study by Gustella and colleagues has addressed this question using a 20-year study that tracked children's behavioural and emotional development. Researchers analysed this against the amount of synthetic oxytocin administered to their mothers during labour.

The overall finding was that there was no relationship between exposure to synthetic oxytocin in labour and autistic behaviours. This was also supported by the research finding that the dosage of synthetic oxytocin was not related to the presence or degree of autistic behaviours.(If synthetic oxytocin. really did cause autism, we would expect to get a 'dose-response 'effect, such that higher dosages would increase the risk and/or severity.)

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Researchers are obviously keen to find biological causes for autism, or at least factors that might increase the risks. There are several other studies that have looked at exposure to synthetic oxytocin during labour and birth as a possible cause, with mixed results.

This is an important study because it has reliable data for the synthetic oxytocin dosage, which was extracted from hospital records, and and for autism diagnosis, which is based on behavioural assessments at two or more times up to age 17.

Some of these concern about long-term effects of synthetic oxytocin comes from animal studies, particularly studies in prairie voles, which are small North American rodents with a complex oxytocin system not unlike ours. Researchers have found effects on adult social and sexual behaviours, when newborn prairie voles are injected with synthetic oxytocin. However, it is important to consider that the dosage used in these newborn animals is 100 times or more higher than would be safe to give to a labouring woman. (In labour, a woman's uterus is very sensitive to oxytocin. An excessive dose will cause overly strong contractions that will endanger her baby.)

In addition, there has been a debate about whether synthetic oxytocin- or the natural oxytocin that the mother releases in labour- can cross the placenta to the baby. Animal studies have found that maternal oxytocin does cross to the baby in labour and even reaches the baby's brain, where it switches on factors that protect the brain from low oxygen.

However, human babies have a more mature brain at birth, and actually produce their own oxytocin, so this mechanism is unlikely to affect human babies, (However there are many other factors that help to protect our baby's brains- see my report below for more).

In addition, even if synthetic oxytocin administered in labour did reach the baby's brain, levels would be very low– around 1/1000 of effective levels in the blood. Such low levels may be more beneficial than harmful. For example, low doses of synthetic oxytocin administered daily to newborn rats reduces their blood pressure and stress responses in adulthood.

However, its is also true that synthetic oxytocin could have detrimental effects for mothers and/or babies by other mechanisms.

If doses are too high and cause excessive contractions, there could be risks of too-low oxygen for the baby (hypoxia). This can cause long-term harms, including brain damage. However, this should be detected by routine monitoring of the baby's heart rate when synthetic oxytocin is given, and action quickly taken if needed.

Harms usually relate to poor monitoring and/or inadequate actions taken.Some hospitals and care provides have recognised these risks and have protocols for the safe administration of synthetic oxytocin, with dosages kept as low as possible to avoid such risks.

Synthetic oxytocin could also affect the baby indirectly, including via the mother. Stronger contractions cause more stress and pain, leading to more interventions for pain relief, including epidurals. which significantly affect the mother's oxytocin system- see my blog here.

And because epidurals reduce the mothers own oxytocin production, labour tends to slow and women are often administered synthetic oxytocin to speed labour. For these reasons, it can be hard to separate the effects of epidurals and synthetic oxytocin for mothers and babies.

Synthetic oxytocin (and /or epidurals) could also impact breastfeeding success, which would impact the long-term health and wellbeing of the baby. (See review articles below) These have not been well studied, despite synthetic oxytocin being very widely used in labour, and also after birth.

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To conclude: the best evidence that we have does not show a connection between synthetic oxytocin in labour and autism. Synthetic oxytocin may have other negative impacts for mothers and/or babies that have not been well studied.

Supporting gentle, natural birth is likely to be the safest long-term strategy to promote health and wellbeing for mothers, babies, fathers and families, with extra support for those who require interventions.

More information and references

Gustella et al 2015 Does perinatal exposure to exogenous oxytocin influence child behavioural problems and autistic-like behaviours to 20 years of age?

Clark 2009 Oxytocin: New perspectives on an old drug. (Risks of synthetic oxytocin)

Erickson 2017 Breastfeeding Outcomes After Oxytocin Use During Childbirth: An Integrative Review

French 2016 Labor Epidural Analgesia and Breastfeeding: A Systematic Review

Petersson 2008 Postnatal oxytocin treatment of spontaneously hypertensive male rats decreases blood pressure and body weight in adulthood

Note for those who have read my 2015 Hormonal Physiology of Childbearing report. *Some of this information, and my opinions, are different to my report, where I discuss possible mechanisms by which synthetic oxytocin might contribute to autism. This study was not published at that time, and I have also has the opportunity to read more about oxytocin for my my PhD studies, including discussion with my PhD advisor Professor Kerstin Uvnas Moberg.*