

Premature birth and brain damage -- inflammation may play a role

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Researchers have gone some way to explaining what happens during premature births and how brain injury develops in premature babies. New findings show that inflammation in both the amniotic fluid and the baby's brain has a role to play, reveals a thesis from the Sahlgrenska Academy.

One of the reasons for premature birth could be [inflammation](#) in the amniotic fluid or the placenta caused by bacteria. The infection triggers labour far earlier than expected. The study saw researchers looking at various factors linked to inflammation, known as markers, in the amniotic fluid of 83 women whose waters broke early or who went into labour prematurely, and of 15 women who had elective caesareans at full term.

"We found that the galectin-3 marker was much higher in women who were threatening preterm delivery and who had signs of infection in their amniotic fluid or [placenta](#)," says Christina Doverhag, a postgraduate student at the Department of Physiology at the Sahlgrenska Academy. "This hasn't been measured in the amniotic fluid before."

The researchers also wanted to investigate the role of free radicals in [brain injury](#) in children who were born prematurely or who suffered a lack of oxygen during birth. Free radicals damage the body's cells and are formed during inflammation, among other things.

"We studied two inflammation markers - galectin-3 and the enzyme

NADPH-oxidase - in newborn mice. Our animal studies showed that galectin-3 can exacerbate brain injury, particularly in newborn males. In our other animal study we removed the NADPH-oxidase enzyme, and this led to greater injury and inflammation in some of the mice," says Doverhag, who draws the conclusion that both inflammation and galectin-3 play a significant role in [brain damage](#) in newborn children.

This means that some medicines under development for the treatment of stroke and brain injury in adults, and which work in part by blocking the release of free radicals and NADPH-oxidase, are unlikely to be suitable for newborns with the same symptoms. They could, in fact, result in further injury.

"On the other hand, there is a common substance that can block galectin-3 and which is about to undergo further testing in the hunt for a treatment for brain injury in newborns," says Doverhag. "That substance is lactose, also known as milk sugar."

However, further research is needed before concrete treatments become available.

"We need to know more about the content of the amniotic fluid and how it affects [premature birth](#), and about how the sex of the unborn baby affects the [amniotic fluid](#)," says Doverhag.

Provided by University of Gothenburg

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