Placental cells may hold hope for preterm brain injury and cerebral palsy

CELLS harvested from a woman's placenta after birth could hold the key to preventing brain damage in preterm babies that leads to cerebral palsy.

Brigid O'Connell Health reporter

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Babies could soon be given injections to prevent or reduce brain damage that can cause cerebral palsy. Picture: iStock

MELBOURNE researchers have successfully repaired and rescued brain cells of animal babies in utero using cells taken from the placentas of new human mothers.

Findings from the preclinical study have boosted hopes that human babies could soon be given the injections straight after birth to prevent or reduce brain damage that can cause cerebral palsy.

“It will hopefully give parents of kids with cerebral palsy hope that there is something we can do about the injury,” said lead researcher Dr Tamara Yawno.

“If we can’t completely treat it, then at least we hope to reduce the severity.”

The team from the Hudson Institute of Medical Research and Monash University published world-first findings three years ago that amniotic epithelial cells, which have stem cell-like properties and are taken from the inner lining of the placenta thrown out in the afterbirth, could repair and prevent brain damage when administered at the same time as the injury.

The Hudson’s Dr Yawno said their latest study importantly showed this approach could work when delivered after the injury, a more realistic application for the one in 400 children born with cerebral palsy.

Amalia learns to walk

The cells may also be used to treat the pregnancy-related bacterial infection, chorioamniotis which can cause similar white brain matter injury by affecting communication across the brain.

The team injected lambs at the human equivalent of 30 weeks gestation — when the foetal brain is most exposed to damage — with an infusion of 60 million human amnion epithelial cells.

These cells were tagged with fluorescent markers, allowing researchers to track the movement of the three infusions given 24 hours apart.

Not only did these cells travel to the infected areas of the white brain matter, but they also reduced damage by stopping the inflammation that kickstarts the death of important brain cells.
“We knew these particular cells have anti-inflammatory properties, we could confirm in this model, but we were surprised at the amount of dying cells they rescued within the white matter, preventing cell death,” Dr Yawno said.

“This is a promising first step.”

The team will now test whether giving the infusion a week after the injury can also prevent or reverse the damage.

They are also now working to uncover whether it is the cells themselves that are protecting the brain, or if the effect is coming from what the cells are producing.

The findings were published in the journal Cell Transplantation.

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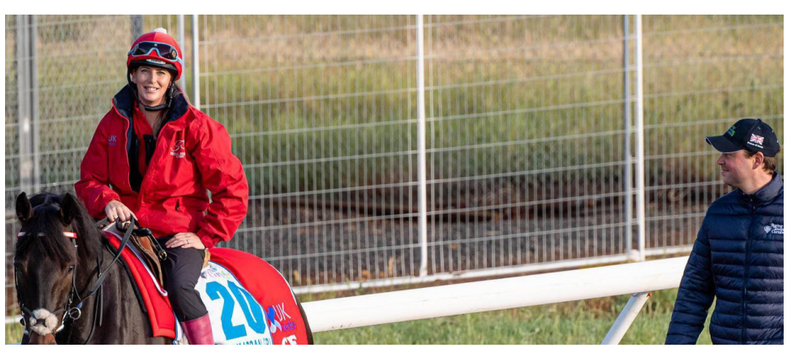

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