Medical Xpress

Why some children wake up delirious from anaesthesia

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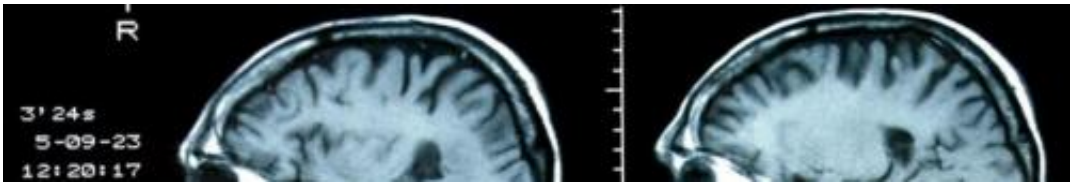

(Medical Xpress)—In a world-first, a newly published study has captured in detail the brain electrical activity in children as they emerge from anaesthesia, shedding light on why some are distressed and agitated when they wake up.

Researchers from Swinburne University of Technology together with colleagues from the Murdoch Childrens Research Institute were able to collect electroencephalography (EEG) data on children who exhibited emergence delirium.

Emergence delirium is a major risk associated with anaesthesia in children and occurs when patients wake up from anaesthesia in a delirious and disassociated state.

Swinburne Professor David Liley said PhD student Jessica Martin and staff at Murdoch Childrens were able to record, with unprecedented

fidelity, brain electrical activity from 60 children aged 5-15 years who emerged from anaesthesia some of whom went on to exhibit emergence delirium.

"This clinical phenomenon is prevalent in children aged six and under, with an estimated 10-30% exhibiting emergence delirium," said Professor Liley.

Researchers found that the brain activity recorded just after stopping sevoflurane (a form of gas anaesthesia) in children exhibiting emergence delirium was substantially different to those children who woke up peacefully.

Associate Professor Davidson from Murdoch Childrens said they discovered that children who wake up suddenly from a deeper plane of anaesthetic are more likely to develop the delirium.

"In contrast, the children who develop sleep like patterns on their EEG before they wake up are more likely to wake up peacefully."

"Intriguingly, emergence delirium looks very much like the more severe form of night terror, which occurs when some pre-school children are disturbed during deep sleep.

"Our study suggests the EEG signatures and the mechanisms may indeed be similar between night terror and emergence delirium.

"Allowing children to wake up in a quiet and undisturbed environment should increase the likelihood that they go into a light sleep-like state after the anaesthetic and then wake up peacefully," said Associate Professor Davidson.

The findings will have significant implications in both predicting those

children who will go on to develop emergence delirium, as well as helping medical professionals better understand its causes in both children and adults.

The study, Alterations in the Functional Connectivity of Frontal Lobe Networks Preceding Emergence Delirium in Children, will appear in the October issue of the high profile clinical journal, *Anesthesiology* and is electronically available ahead of print.

Provided by Murdoch Childrens Research Institute

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