Medical Xpress

Muscle relaxants linked with increased risk of breathing problems after surgery

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Muscle relaxants given to millions of patients during general anaesthesia are associated with an increased risk of serious breathing problems after surgery, finds a study published in *BMJ* today.

The results also suggest that giving drugs to reverse the muscle relaxants after surgery may increase the risk further.

But an accompanying editorial argues that, in modern medicine, general anaesthesia is an extremely safe procedure and it would be a mistake to change clinical practice on the basis of this one study, however large and well executed.

Known as intermediate acting neuromuscular blocking agents, these drugs work by temporarily blocking nerve signals to muscles. They decrease the need for deep anaesthesia allowing faster recovery after surgery.

When they were first introduced 70 years ago, these blocking agents revolutionised surgical care, but in the 1950s, concerns were raised that they could linger in the body after surgery, causing partial paralysis of the muscles needed for breathing, and putting patients at risk of respiratory complications.

As a result, anaesthetists are now advised to carefully measure the effects of these drugs throughout surgery and to give a drug to reverse the effects at the end of surgery. Subjective clinical assessment is most

often used by the anaesthetist without any scientific measurements being made, however.

To address these concerns, an international team of researchers compared outcomes for 18,579 patients who received at least one intermediate acting neuromuscular blocking agent during surgery with the same number of patients who did not.

They found that respiratory complications, such as deteriorating blood oxygen levels (desaturation) and the need for re-intubation after surgery (a tube inserted into the throat and airway to aid breathing) were more common if a muscle relaxant and a reversal agent had been given, particularly for shorter operations.

Although unusual, re-intubation after surgery often requires admission to an intensive care unit and help with breathing (mechanical ventilation), which is expensive and translates into a higher (but still very low) risk of dying in hospital, explain the authors.

Subjective monitoring during surgery did not significantly modify the risk.

The authors point out that they did not assess the effects of measuring muscle response during surgery in their trial, which may explain some of their findings. But they, like many other experts, believe that subjective monitoring should be replaced by specific measurements throughout an operation. This would give doctors real (objective) numbers to help them compare patient outcomes against a standard model of care.

However, they say their results suggest that neuromuscular blocking agents may be an independent risk factor for severe respiratory events in the first few days after surgery. "Strategies to prevent residual postoperative neuromuscular blockade should be revisited," they

conclude.

In an accompanying editorial, Jennifer Hunter, Emeritus Professor of Anaesthesia at the University of Liverpool, says the study is timely, but she expresses concern that, in light of current available evidence, "it would seem wise to continue to use quantitative neuromuscular monitoring, intermediate acting neuromuscular blocking agents, and a reversal agent unless full recovery of neuromuscular function has been adequately demonstrated."

More information: Intermediate acting non-depolarizing neuromuscular blocking agents and risk of postoperative respiratory complications: prospective propensity score matched cohort study, *BMJ*, 2012.

Editorial: Antagonising neuromuscular block at the end of surgery, *BMJ*, 2012.

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