Medical Xpress

Major report shows obese patients have double the risk of airway problems during an anesthetic

March 29 2011

A major UK study on complications of anaesthesia has shown that obese patients are twice as likely to develop serious airway problems during a general anaesthetic than non-obese patients. 'The airway' means the air passages from the outside world to the lungs, which must be kept open to keep the patient alive. The study also shows that the use of a simple breathing monitor, called a capnograph, could significantly reduce deaths and brain damage from such problems in intensive care units (ICUs); it found that absence of a capnograph contributed to 74% of deaths from these events in ICUs during the study.

The report, which is published in two parts online today in the *British Journal of Anaesthesia* [1], is the result of a yearlong prospective study by the Royal College of Anaesthetists (RCoA) and the Difficult Airway Society and will be presented to a meeting of the RCoA on Wednesday 30 March. The full report is available on the RCoA website on the same day. The project, which identified that 2.9 million general anaesthetics are given in the UK each year, monitored all major complications of airway management that occurred in these patients and in ICUs and in emergency departments throughout the UK in 2008-2009. It studied only events serious enough to lead to death, brain damage, ICU admission or urgent insertion of a breathing tube in the front of the neck.

The report has several findings and recommendations; but those on obesity and the monitoring of breathing are among the most striking.

Obesity

In addition to the two-fold increased risk of obese patients developing serious airway problems during an anaesthetic, the study also found that patients with severe obesity [2] were four times more likely to develop such problems. In addition, obese patients were more likely to die if they sustained airway complications in ICU.
Some obese patients died from complications of general anaesthesia whilst undergoing procedures that could have been performed under local or regional anaesthesia (where only part of the patient's body is anaesthetised). In some cases this alternative appeared not to be considered.

Dr Nick Woodall, Consultant Anaesthetist at the Norfolk and Norwich Hospital (Norwich, UK), and an author of the report says: "Our findings show that patients who are obese have twice the risk of major airway problems during anaesthesia, compared to non-obese patients. In the very obese this risk is even higher. The report is important for patients and anaesthetists alike. The information will enable obese patients to be better informed about the risks of anaesthesia and to give informed consent. We hope our findings will encourage anaesthetists to recognise these risks and choose anaesthetic techniques with a lower risk, such as a regional anaesthesia, where possible, and also prepare for airway difficulties when anaesthetising obese patients."

Monitoring breathing in intensive care units

Airway problems were more likely to result in death in patients sedated on ICUs than if they occurred during anaesthesia for surgery. Half of the reports of events on ICUs described a patient death from the complication, whereas 12% died when the complication occurred during anaesthesia. Of the events reported from ICU 61% led to death or brain

damage, compared to 14% of events during anaesthesia.

The most important finding was that the absence of a breathing monitor (capnograph) contributed to 74% of airwayrelated deaths reported from ICUs. The authors say that if the monitor had been used it would have identified problems at an earlier stage and so could have prevented some of the deaths altogether. The capnograph, which detects exhaled carbon dioxide, is used almost universally in anaesthesia but only sporadically in ICUs. Several authors and organisations have recommended that it should be used routinely in ICUs but, at present, this does not appear to be happening.

Dr Tim Cook, a Consultant in Anaesthesia and Intensive Care at the Royal United Hospital, Bath (Bath, UK), and one of the report authors, says: "The findings of this report indicate that when airway problems arise in this group of sick patients the consequences are often very severe. The report makes several recommendations to improve the safety of airway management in the ICU. The single most important change that would save lives is the use of a simple breathing monitor, which would have identified or prevented most of the events that were reported. We recommend that a capnograph is used for all patients receiving help with breathing on ICU; current evidence suggests it is used for only a quarter of such patients. Greater use of this device will save lives."

Although the poor physical condition of patients needing to be in ICU possibly accounted for some the difference in outcome, the report identified several other causes:

- patients on ICU who are at risk of airway problems were less likely to be identified (and their management changed) than when undergoing anaesthesia;

- the range of equipment available to manage patients with difficult airways is often less extensive in ICU compared to patients being anaesthetised in operating theatres;

- changes in training mean that the junior doctors looking after patients out of hours on ICU may have little experience in the management of difficult airway problems;

- rescue techniques (procedures performed to resolve a problem with the airway) are less likely to be successful in ICU compared to during anaesthesia.

Dr Cook says: "Despite the finding of this project, it is clear that anaesthesia remains extremely safe. The report estimates that a life-threatening airway complication occurs in less than one in 20,000 general anaesthetics (0.005%) and death in approximately one in 180,000 anaesthetics. Most patients who had complications that were reported to this project had identifiable risk factors such as obesity or head and neck cancer; these patients are at a much higher risk of airway complications than healthy patients undergoing anaesthesia and surgery."

Dr Peter Nightingale, President of the RCoA, comments: "I believe this report highlights areas of critical concern for all doctors involved in maintaining the airway of patients receiving anaesthetics or in intensive care units. The report provides a specific insight into the high risks and complications associated with airway management and obese patients which should act as a focus for all healthcare professionals treating such patients."

Dr Ellen O'Sullivan, President of the Difficult Airway Society, adds: "The Difficult Airway Society welcomes the publication of this

important study which emphasises the critical importance of high quality airway management in providing safe care of patients during anaesthesia and in intensive care. The report shows that in a small number of cases there is room for improvement and it is important that as a profession we listen to these lessons."

More information: "Major complications of airway management in the UK: results of the 4th National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society. Part 1 Anaesthesia." British Journal of Anaesthesia. doi:10.1093/bja/aer058

Provided by Oxford University