

Rapid sequence induction in patients with acute appendicitis: is it always justified?

General anaesthesia in patients with suspected acute appendicitis is common. Rapid sequence induction is the most widely used method of induction of anaesthesia in these patients although non-rapid sequence intravenous induction is an alternative (Istvan et al, 2007).

In patients with suspected acute appendicitis the majority of anaesthetists choose a rapid sequence induction technique. While this is justified in some instances, it may reflect a lack of appreciation of the increased risk of regurgitation in these patients at the time of induction, the ability of rapid sequence induction to protect against this and the potential pitfalls of this technique.

This article challenges the widespread use of blanket rapid sequence induction in patients with suspected acute appendicitis in favour of a more logical, evidence-based approach to the risk of regurgitation.

The argument for rapid sequence induction

In the 1950s aspiration was identified as the largest cause of anaesthesia-related deaths, a statistic which persists today.

In 2011 the Royal College of Anaesthetists published results of their 4th National Audit Project on major complications of airway management (NAP 4). The incidence of aspiration was 1 in 6–800 during emergency surgery, with fatal aspiration as common as 1 in 45 000, representing 50% of anaesthesia-related deaths. The report also criticized the ability of some anaesthetists to properly assess

aspiration risk and alter their induction technique accordingly (Cook et al, 2011).

Asai (2004) notes the additional disease-specific factors in acute appendicitis that increase the risk of aspiration, including emergency surgery, delayed gastric emptying secondary to possible systemic infection and opioid analgesia, all of which are common in acute appendicitis. Notwithstanding a patient's pre-morbid risk anaesthetists often err on the side of caution and perform a rapid sequence induction in these patients regardless of where on the risk spectrum they fall.

The argument against rapid sequence induction

NAP 4 revealed that of the 23 cases of aspiration of gastric contents, arguably only three were preventable with a rapid sequence induction technique (two occurring after induction but before airway management and one during standard laryngoscopy). The majority of cases (13/23) occurred during maintenance of anaesthesia with a supraglottic airway or mask, three during Guedel insertion, one during an awake fiberoptic intubation, one during supraglottic airway insertion, one during a rapid sequence induction and one at emergence (Cook et al, 2011).

Furthermore, in a Norwegian study of 2861 patients undergoing surgery for acute appendicitis only 78% had histological evidence of the disease (Körner et al, 2001), which is compounded by Asai's (2004) findings that surgery on the lower gastrointestinal tract is not associated with an increased risk of aspiration per se.

Debate continues as to whether rapid sequence induction significantly reduces aspiration rates (Neilipovitz and Crosby, 2007). This technique is associated with higher incidences of difficult and failed intubation, hypoxia, oesophageal trauma, cardiovascular instability, and awareness (Wallace and McGuire, 2014), together with higher rates of perioperative anaphylaxis secondary to succinylcholine or

rocuronium use compared with atracurium, cis-atracurium or vecuronium (Sadleir et al, 2013).

Conclusions

So what can we conclude from this? Some advocate persisting with an indiscriminate rapid sequence induction approach, arguing that the risks are probably too low to suggest a change in practice. In reality, patient, anaesthetic and disease factors influence the likelihood of regurgitation and aspiration at induction of anaesthesia, some more than others.

A balanced approach is advocated to assessing whether a rapid sequence induction should be used on an individual patient basis. **BJHM**

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Dr Peter Keogh is ST6 in Anaesthesia and Pain Medicine, Barts and the London School of Anaesthesia, St Bartholomew's Hospital, London EC1A 7BE

Dr Tara Keogh is CT2 Anaesthesia in the Stoke on Trent School of Anaesthesia, Royal Shrewsbury Hospital, Shrewsbury

Correspondence to: Dr P Keogh (peter.keogh3@bartshealth.nhs.uk)

Anaesthetic and critical care dilemmas are coordinated by **Dr Rob Anker**, Anaesthetic Registrar (ST6), Royal Marsden Hospital, London and **Dr Prashanth Nandhabalan**, Specialist Registrar in Anaesthesia and Intensive Care, King's College Hospital NHS Foundation Trust, London