Editorial

Access this article online

Website: www.ijaweb.org

DOI: 10.4103/0019-5049.130798

Quick response code

Monitored anaesthesia care: Case for a smarter management

Monitored anaesthesia care (MAC) is provided for various diagnostic and therapeutic procedures and has undergone welcome changes in the recent years. Anaesthesiologists are expected to provide sedation, analgesia and other pharmacological interventions and monitor the patient.[1]

There is a thin line separating MAC from the conventional anaesthesia and a backup anaesthesia plan must always be ready before a MAC service and hence the standards of care for MAC are expected to be maintained at the same levels as during the conventional technique. The basic purpose of MAC is to avoid exposure to conventional anaesthesia and the pitfalls therein and provide a "balanced monitored anaesthesia", with the aim of maximising patient and surgeon comfort while minimising economic burden on the patient and the health care delivery system. A poorly balanced MAC is a recipe for disaster when compared with the conventional anaesthesia techniques, especially if the plan B has to follow the MAC.

Various anaesthetic techniques have been employed during MAC with regional techniques being favoured because of faster recovery. Various anaesthetic agents have been tried over the years for inducing sedation and analgesia with differing success rates. Propofol has been the dominant drug to provide sedation during MAC for nearly 25 years due to its impressive pharmacological profile. The availability and administration of shorter acting opioid analgesics and benzodiazepines adds to the attractiveness of propofol, but the risk of respiratory depression and vomiting persists as also the risk of moderate cardiovascular depression. Ketamine is primarily meant to complement the 'analgesia' when added to such combinations and minimises cardiovascular depression. Among the published literature, remifentanil was used with propofol for awake craniotomies under MAC, but the difficulty was noted in titrating the drug infusions to achieve safe levels of sedation without compromising respiration.[2] Ketamine added to propofol reduced the need for rescue opioids in a dose dependent manner, but increased incidence of nausea, vomiting and psychomimetic side-effects and delayed discharge times with higher doses.[3]

These mismatches in 'balanced MAC' can be potentially overcome by dexmedetomidine, an alpha 2 adrenoceptor agonist, by virtue of its sedative, analgesic and anaesthetic sparing effects. It has been used as sole anaesthetic agent in patients with compromised respiratory status.[4] However, in a study comparing midazolam with dexmedetomidine for sedation during cataract surgeries, it was noted that dexmedetomidine infusion delayed recovery room discharge despite good cardiovascular profile and slightly higher patient satisfaction scores.[5] In neurosurgical settings, dexmedetomidine when used as a sole agent and in combination with propofol and fentanyl during awake craniotomies for seizure resection and for tumour resection had minimal effect on electrocorticography, allowing accurate mapping of epileptic foci and subsequent resection.[6,7] A review of the role of dexmedetomidine in functional neurosurgeries showed that successful sedation could be achieved with minimal impairment of electrophysiological monitoring, though the review was limited to a small case series.[8] More number of prospective controlled trials may be needed to assert the role of this drug in monitored anaesthesia care.

In this issue of IJA, in a prospective study, Priyamvada

How to cite this article: Bhaskar SB, Sudheesh K. Monitored anaesthesia care: Case for a smarter management. Indian J Anaesth 2014;58:118-9.

Gupta *et al*., have reported the utility of two different doses of dexmedetomidine as agent for sedation in patients undergoing general, otolaryngological and plastic surgeries under MAC.[9] Dexmedetomidine was associated with lower requirements of rescue doses of midazolam and fentanyl for sedation and analgesia respectively with no clinically or statically significant difference between the higher or lower doses. However, there was a slight increase in the incidence of bradycardia and hypotension with the higher dose and at both the doses used, no respiratory depression was observed.

In a prospective open label study by Prabhavathi Ravipati *et al*.[10] also published in this issue, the anaesthetic drug sparing effect of dexmedetomidine was assessed in burns patients undergoing dressings and debridements. It was observed that dexmedetomidine not only reduced the requirements of both ketamine and propofol, but also hastened recovery with minimal effect on haemodynamic parameters, thus highlighting the promising role of this drug in MAC.

The use of proper drugs or proper combinations during MAC simultaneously needs suitable monitoring to avoid complications. In addition to the initial recommendations for use of pulse oximetry for monitoring the pulse rate and the oxygen saturation of the patient undergoing procedures under MAC, guidelines on minimum standards of monitoring for these patients for haemodynamics and respiration have now included and emphasised the role of electrocardiogram and capnography.[11-13] Cataract surgery, a largely geriatric specific procedure, forms a big chunk of MAC procedures. In a closed claim, analysis assessing injury and liability associated with MAC, older and sicker patients had higher incidence of adverse events. Respiratory depression, after absolute or relative overdose of sedative or opioid drugs was the most common specific damaging mechanism in MAC claims, stressing further the importance of vigilance, monitoring, and early resuscitation.[14]

The increased demand for MAC in an increasingly litigant world means the anaesthesiologist must use the right drugs and drug combinations and also maintain the high level of vigilance during monitoring the patient. Smarter use of drugs and the monitors can ensure a safe and balanced MAC and outcome.

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