Use of intravenous lignocaine in the perioperative and chronic pain setting

Intravenous lignocaine has an emerging role in the treatment of acute pain within the perioperative setting, as recent consensus guidelines from the Association of Anaesthetists have shown. It has played a role in chronic pain management in recent decades, and continues to be a useful tool for pain specialists.

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Practical considerations

Lignocaine is a drug which has a narrow therapeutic window, and plasma levels above >5 µg/ml can have serious neurological and cardiovascular sequelae (Eipe et al, 2016). A consensus statement from the Association of Anaesthetists gives guidance on the use of lignocaine perioperatively (Foo et al, 2021). Patients should be monitored in a high dependency level area outside the operating theatre. Ideal body weight should be used for dosing, and a lignocaine infusion should not be used in conjunction with another local anaesthetic, such as a regional block. A dedicated cannula should be used to administer the infusion, and the reversal agent, Intralipid 20%, should be kept nearby in an area familiar to staff.

Dosing guidance suggests lignocaine should be administered as an initial bolus of 1.5 mg/kg given over 10 minutes, with a further infusion of 1.5 mg/kg/h for no longer then 24 hours (Foo et al, 2021).

Perioperative indications

Intravenous lignocaine can be used as an alternative to regional anaesthesia if this is contraindicated, or as part of an enhanced recovery protocol. It may also be used as part of an opioid-sparing technique in cases of chronic pain, when treating people who are obese, those with obstructive sleep apnoea, or in patients with previous traumatic limb amputations or spinal surgery with concurrent neuropathic pain (Eipe et al, 2016).

Intraoperative benefits

The mean alveolar concentration of volatile anaesthetics can be reduced by one third when used in conjunction with intravenous lignocaine. Its use can blunt haemodynamic responses during laryngoscopy, and can decrease airway reactivity in smokers under anaesthesia (Dunn and Durieux, 2017).

Postoperative benefits

Lignocaine has major benefits in terms of reducing postoperative pain scores and opioid consumption. In patients who have had abdominal surgery, time to first flatus and bowel movement is significantly reduced, as well as length of hospital stay. These effects mean that it can be used within an enhanced recovery protocol to decrease hospital stay and maximise fast recovery after major surgery (Sun et al, 2012). Similarly, decreased opioid requirements and improved quality of life post-surgery have been reported in patients who have had spinal surgery, as well as a reduction of chronic pain in patients post-mastectomy (Dunn and Durieux, 2017).

Chronic pain

A number of randomised controlled trials have shown that doses of up to 5 mg/kg can be effective in improving pain in chronic pain conditions (Kandil et al, 2017). Modulation of

sodium channels causes plasticity in neurones responsible for inappropriate pain, limiting development of allodynia and hyperaesthesia, two hallmarks of chronic regional pain syndrome (Koppert et al, 2000). Those suffering from intractable cancer pain can also benefit from systemic lignocaine, with case reports suggesting a decrease in analgesia requirements and an improvement in pain following single lignocaine infusions (Kandil et al, 2017). Although consensus reports suggest that patients receiving lignocaine infusions should have cardiac monitoring, for those in hospice care this may be inappropriate and difficult to arrange. A case report series showed lignocaine infusions were being administered with only vital signs monitoring and close observation (Peixoto and Hawley, 2015). This certainly should not be accepted practice in most clinical settings, but may have a role in well-defined, end of life care policies.

Intravenous lignocaine has been proven to be a useful pain adjunct in major surgery, as well as for those suffering chronic or intractable pain. It will continue to play a vital role in perioperative and chronic pain medicine.

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