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- Media representation of chronic pain in NZ

Welcome to issue 23 of Anaesthesia and Pain Management Research Review.

This issue begins with a systematic review with meta- and trial sequential analyses reporting, albeit with low certainty of evidence, that high-dose intraoperative opioids are associated with higher postoperative pain scores than low-dose regimens of the same opioid. There is also a narrative review article outlining important considerations for anaesthesiologists when managing patients who are being or have been treated with immunotherapy with immune checkpoint inhibitors.

The pain management research begins with a paper reporting that young adult women who have experienced childhood maltreatment, particularly if they have also experienced post-traumatic stress as adolescents, are more likely to report pain conditions. To conclude this issue, we have an interesting article on how the mainstream media outlets in NZ portray chronic pain and if best practice is being accurately broadcast to the NZ public.

We hope you find the selected research helpful in your everyday practice, and we encourage you to keep sending us your comments and feedback.

Kind regards,
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Low- versus high-dose intraoperative opioids
Authors: Albrecht E et al.

Summary: This was a systematic review with meta-analyses and trial sequential analyses of 27 RCTs (n=1630) comparing high and low doses of the same intraoperative opioid in patients receiving general anaesthesia, and reporting pain outcomes. There was low-certainty evidence that compared with low doses, high doses of the same opioid were associated with higher at-rest 10-point pain scores at postoperative hours 24 (primary outcome) and 2 (respectively mean differences, −0.2 [95% CI −0.4, −0.1] and −0.4 points [−0.6, −0.2]), greater cumulative consumption of intravenous morphine equivalents (−1.6mg [−2.6, −0.7]) and a significantly lower pressure threshold for mechanical pain (3.8 g/mm² [1.8, 5.8]).

Comment (JB): The take-home message for any budding researchers with a yearning to perform a meta-analysis is pick a subject that lends itself to narrow search terms. The two authors assessing the search results for this meta-analysis failed in this regard, and they had to review 4922 abstracts in order to filter out the 27 trials that provided the data for the meta-analysis. Sadly, this Olympic-level dedication was not rewarded with gold-medal results; statistical significance for the primary outcome, that higher intra-operative opioid doses lead to higher pain scores at rest 24 hours postoperatively, but the actual difference in pain score was small and the result came with a low level of certainty. As a demonstration of how thinking has changed over the last 25 years, the oldest studies included in the analysis were designed to demonstrate a positive pre-emptive analgesic effect of high-dose intra-operative opioids. The overall low certainty reflects issues with bias in the trial designs and the marked heterogeneity in dose regimens. The ratio between low and high dose varied between 1:15 and 1:1.5, and what was a high dose in some studies was a low dose in others. When attempting to generalise this work to the clinical context, possibly the most difficult aspect to account for was the low usage of multimodal analgesia. Only two of the trials included regular paracetamol (acetaminophen) and only five included an NSAID (nonsteroidal anti-inflammatory drug). As you have probably surmised, the authors concluding remark was a plea for more research and better data.


Abstract

Independent commentary by Dr John Barnard

Dr John Barnard works as an anaesthetist at Waikato Hospital with a part time academic component. In addition to his role in the operating theatres, four years ago he became the Clinical Director of the Hospital Pharmacy and Chairman of the hospital’s Medicines and Therapeutics Committee.
Complications related to peri-operative transoesophageal echocardiography

Authors: Ramalingam G et al., on behalf of the Association of Cardiothoracic Anaesthesia and Critical Care

Summary: These authors reported complication rates and severity associated with perioperative transoesophageal echocardiography in anaesthetised cardiology and cardiac surgical patients recorded in a 1-year prospective national audit of 28 centres from the UK and Ireland. Among 22,314 examinations audited, 17 patients experienced a major complication that resulted in either palatal injury or gastrointestinal disruption (incidence 0.08%, or ~1 per 1300 examinations). These complications resulted in seven deaths (incidence 0.33%, or ~1 per 3000 examinations, and an ~40% likelihood of death after developing a complication). Most of the patients who developed complications had no known risk factors for transoesophageal echocardiography-associated gastro-oesophageal injury.

Comment (JB): For a cardiac or vascular surgeon or an interventional cardiologist, a major complication rate of 0.3% would be something to be proud of. For an anaesthetist, it is something to be concerned about. We have a different setpoint for accepting complications, especially complications related to patient-monitoring technology. The patient shouldn’t be harmed by the monitoring we apply. This paper provided real-world contemporary data that defined a rate of severe harm approximately double the rate expected by the authors and a high mortality rate (40%) if a patient did suffer serious harm. Both oesophageal rupture and major upper gastrointestinal bleeding are particularly hazardous. The authors conclude that there is probably room to improve, especially with respect to probe insertion techniques and consent processes. Importantly, the serious harm was not predicted by traditionally accepted risk factors like the presence of a hiatus hernia. On the other side, transoesophageal echocardiography has become an integral part of many cardiac procedures, so any harm from the monitoring technique must be weighed up against the benefit it has on the success of the procedure.

Reference: Anaesthesia 2020;75:21–6

Abstract

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Reference: Anaesthesia 2020;75:21–6
The effect of brief pre-anesthetic exercise therapy of jaw and neck joints on mouth opening, neck extension, and intubation conditions during induction of general anaesthesia

Authors: Lee SY et al.

Summary: Patients receiving general anaesthesia were randomised to massester muscle massage and stretching of jaw and neck joints prior to induction (n=70). Images of the exercises were provided in the freely available paper or a control group (n=68). Mallampati scores differed significantly between the two groups at anaesthetic induction (p=0.039). Compared with the control group, the exercise group had a greater incidence of Mallampati scores of 1 (odds ratio 2.1 [95% CI 1.0, 4.3]), greater mouth opening (p=0.042) and fewer soft tissue injuries (0.2 [1.8, 0.8]); there was no significant between-group difference for sternomental distance (p=0.175) or for intubation difficulty scale score (p=0.112).

Comment (JB): This was an entertaining ‘low-budget movie’ sort of study. If patients spent 5 minutes performing some simple jaw and neck stretching exercises immediately prior to a general anaesthetic, their intubation could be performed quicker, with less force and less trauma. This could stimulate a small revolution in the preoperative waiting room. Rather than patients getting anxious and grinding their teeth, they could be provided with a hand-held mirror and a laminated card of face and jaw exercises.

Reference: BMC Anesthesiol 2020;20:28

Abstract

Immune checkpoint inhibitors: a narrative review of considerations for the anaesthesiologist

Authors: Lewis AL et al.

Summary: Mechanisms of action, therapeutic effects, pertinent toxicities and specific perioperative considerations regarding immune checkpoint inhibitors (used to treat cancer) were discussed in this narrative review with emphasis on implications for anaesthesiologists. The review begins by outlining the basics of immunology and the two main immunological targets for cancer therapies (namely the CTLA-4 [cytotoxic T-lymphocyte-associated antigen-4] and PD-1 [programmed cell death-1] pathways). There is a section on immune-related reactions and anaesthetic considerations, which describes endocrine, cardiac, pulmonary and gastrointestinal toxicities, and the unique challenges anaesthesiologists face when managing patients receiving these treatments.

Comment (JB): This is a useful article, tailored for anaesthesia readership, about a new class of anticancer medications, immune checkpoint inhibitors. The authors found a good balance between detail and key concepts. One central concept is the twin stimulatory signal needed for T-cell activation, the MHC/antigen/T-cell receptor signal (always stimulatory) together with a checkpoint signal, which may be stimulatory or inhibitory depending on which combination of receptor and ligand dominates. Tumour cells commonly ‘hide’ from the host’s immune system by producing ligands that promote inhibitory signals. Immune checkpoint inhibitors are designed to block the inhibitory signal. Unfortunately, the immune checkpoint inhibitors are not entirely specific to tumour-host immune system interactions and these medications have a range of immune mediated adverse effects. Gut, heart, lung and endocrine system adverse effects are the most relevant to anaesthesia. The pituitary is notably vulnerable, leading to a range of endocrinopathies, chiefly reduced production of ACTH (adrenocorticotropic hormone) and/or TSH (thyroid stimulating hormone). The profile of immune related side effects varies with each specific agent, and combination treatments are generally worse than single agent regimens. These medications are somewhat unpronounceable but all of them end in ‘umab’, so look out for this suffix.


Abstract

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Highened risk of pain in young adult women with a history of childhood maltreatment

Authors: Beal SJ et al.

Summary: Pain symptoms were reported for a prospective cohort of 273 females aged 14–17 years at recruitment who had a documented history of childhood maltreatment, with a matched cohort of women who had not experienced childhood maltreatment serving as comparators. The participants had received annual follow-up assessments to 19 years of age, and 383 were surveyed at a mean age of 24.76 years regarding their pain experiences. Compared with women who had not experienced maltreatment as a child, those who had reported greater pain intensity, more body areas affected by pain and a greater likelihood of experiencing pain in the prior week. The effects of childhood maltreatment on pain were partially explained by adolescent post-traumatic stress.

Comment (GL): Some of the findings from this study are frightening, given the extent of child adversity in NZ. This was a large, prospective, good-quality study, which is why it is published in a decent journal. While the significant relationships between childhood maltreatment and pain as a young adult were not strong and the differences between groups were not large, even a small increase in risk across a large number of people can add up to a significant impact. In particular, in relation to NZ, childhood exposure to violence, disruptive family structures and childhood illness all related to aspects of pain experienced as a young adult. Thus, similar to many other social and health issues, those most in need are those at risk of further problems. It was interesting that most of the effects of childhood maltreatment on pain were mediated by post-traumatic stress symptoms. Helping children and adolescents cope with the ongoing effects of maltreatment and adversity may be key in modifying this risk.

Reference: Pain 2020;161:156–65

Abstract

Mind-body therapies for opioid-treated pain

Authors: Garland EL et al.

Summary: This was a systematic review with meta-analysis of 60 RCTs (n=6404) evaluating meditation (five RCTs), hypnosis (25 RCTs), relaxation (14 RCTs), guided imagery (seven RCTs), therapeutic suggestion (six RCTs) or CBT (cognitive behavioural therapy; seven RCTs) for managing symptoms in adults who had also been prescribed opioids for clinical pain; most of the studies used active or placebo controls and were assessed to have a low risk of bias. Overall, mind-body therapies were found to reduce pain and opioid doses (respectively Cohen d values, −0.51 [95% CI −0.76, −0.26] and −0.26 [−0.44, −0.08]), with moderate-to-large effect sizes for improvements in pain outcomes seen for meditation, hypnosis, suggestion and CBT, but not for the other mind-body therapies assessed. Improvements for opioid-related outcomes were reported in most medication, CBT and hypnosis studies, but in fewer suggestion, guided imagery and relaxation studies.

Comment (GL): This study took a novel approach to review the impact of mind-body therapies on pain and opioid use by specifically including studies with all participants currently taking opioids. I see the rationale for this in terms of reducing opioid load, but it meant there was a focus on pain as an outcome, where I would have liked to have seen the inclusion of psychosocial outcome measures, as these are likely to be impacted positively by mind-body therapies and make a big contribution to quality of life. Nevertheless, the studies involved in the review were largely high-quality, so there is good strength to the evidence provided. While overall there was a useful effect of mind-body therapies on pain and opioid reduction, it was not surprising that some therapies were more effective than others. I imagine that not all of the therapies reviewed would be appealing to all patients, so it’s nice to know that quite a few are effective and clinicians could consider offering a range of options. What may be just as important is the lack of harm of the interventions, so even if they don’t work for everyone, they won’t cause unnecessary side effects. The authors suggested that future research should compare between different mind-body therapies and pull apart combined therapies to isolate the effective components. I am less supportive of disentangling these components and suggest that it would be more useful clinically to determine what works best for acute and chronic pain situations, given they were combined in this review. Many of the single-session interventions, while effective for reducing an isolated acute pain experience, may not be beneficial for those with more long-standing pain.


Abstract

Preemptive and preventive pain psychoeducation and its potential application as a multimodal perioperative pain control option

Authors: Horn A et al.

Summary: These authors systematically reviewed preoperative educational methods applied as pre-emptive and preventative psychological approaches to ameliorate pain and improve outcomes after surgery. Pre-emptive psychoeducation, which is implemented prior to surgery, includes information about regional or neuraxial analgesia, while preventative psychoeducation is used for the duration of the perioperative period. It was reported that pre-emptive psychoeducation has the potential to assist patients in the formation of accurate expectations and to address concerns with respect to surgical outcome, resulting in significant decreases in their anxiety levels. When the psychological needs of patients are addressed with preoperative education, postoperative recovery time and postsurgical acute pain can both be decreased. Fewer opioid prescriptions are required when postsurgical acute pain is reduced.

Comment (GL): Persistent postoperative pain is a big deal and a big interest of mine, so I was quite excited about this review. My excitement dwindled the more I read. For a start, calling it a review of ‘psychoeducation’ was a little generous (it was really just plain education), and the provision of preoperative education is not a new concept, given multiple reviews have previously been published across different surgeries. The search strategy was poor, bordering on abysmal, with almost half the included articles coming from other sources, and the inclusion criteria were perplexing. The authors really had five separate questions that they were trying to compact into one study, and this morphed into one poor, disjointed review. What did I like? The paper makes a point in the Introduction that we’ve noticed before: almost all studies designed to reduce postoperative pain focus on pharmaceutical (or surgical) interventions and ignore the fact that a number of the more consistent predictors of acute and chronic postoperative pain outcomes are psychosocial. In undertaking their review(s), this paper anecdotally provides further evidence and argument for this, although I suggest a true multimodal intervention would involve medical, psychological and activity-based aspects.

Reference: Anesth Analg 2020;130:559–73

Abstract
Alterations in pronociceptive and antinociceptive mechanisms in patients with low back pain

Authors: McPhee ME et al.

Summary: This systematic review included 20 original papers comparing CPM (conditioned pain modulation) and 29 comparing TSP (temporal summation of pain) with healthy controls or reference data in patients with LBP (low back pain); 18 (1500 patients versus 505 controls) studies of CPM and 27 (1507 patients versus 1127 controls) of TSP had data suitable for meta-analysis. Most of the included studies were of poor-to-fair quality and were significantly heterogeneous with respect to study size, population, assessment methodology and outcomes. Despite this, there was evidence that patients with LBP had impaired CPM compared with controls (standardised mean difference, −0.44 [p<0.001]); the magnitude of this impairment was significantly related to pain chronicity (acute/recurrent versus chronic), duration and severity (p≤0.02). Compared with controls, patients with LBP had better TSP (standardised mean difference, 0.50 [p<0.001]), the magnitude of which was weakly but significantly related to pain severity (p=0.04) and significantly influenced by test modality (p<0.001).

Comment (GL): Now this is a good paper, and not just because they cite two of our articles. Given that the majority of LBP is unspecific in origin, it seems pertinent to look at changes in the nociceptive system to identify potential explanations for the pain experience. In other, mainly chronic, pain conditions there is clear evidence of altered nociceptive processing, but many people still search for a musculoskeletal origin of LBP. The review focused on a very specific question and the authors were able to develop an exhaustive search strategy with rigorous inclusion and exclusion criteria. While they provide good evidence of impaired nociceptive inhibition and exaggerated facilitation in LBP, for me the more important result was that these effects were greater in those with more chronic pain and with higher pain intensity. Thus, there seems to be a relationship between ongoing, high-intensity pain and altered nociceptive processing. The direct clinical implications of these findings are limited by the chicken and egg scenario – not knowing whether altered nociceptive function predisposes someone to LBP or vice versa – and what the findings mean individually is questionable given the overall group differences were small. Still, the findings at least provide some explanation as to why excessive pain is present in these people, particularly in the longer term.

Reference: Pain 2020;161:464–75

Abstract

Independent commentary by Gwyn Lewis

Associate Professor Gwyn Lewis is a neuropsychiologist based at AUT University’s North Shore Campus in Auckland. She obtained a PhD in motor control from the University of Auckland in 2003. Gwyn had an extended post-doctoral experience undertaking research in motor control, rehabilitation and neurophysiology at the Rehabilitation Institute of Chicago. She currently spends half her time teaching in AUT’s physiotherapy programme and the other half undertaking pain research in the Health and Rehabilitation Research Institute. Most of her research is in pain neurophysiology and how it relates to persistent pain development, efficacy of pain modulation pathways, and cognitive factors and psychosocial influences.

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Media representation of chronic pain in Aotearoa New Zealand – a content analysis of news media

Authors: Hemakumar D et al.

Summary: The ways that NZ news outlets have reported on chronic pain and how these accurately reflect best practice were reported in this research. The researchers analysed news media content published between January 2015 and June 2019, and identified 242 articles. They identified the following overarching themes: i) the lived experience and the impact of chronic pain; ii) pain management strategies with information on pharmacological and nonpharmacological strategies; and iii) the systemic issues influencing chronic pain healthcare pathways. The conclusions were that living with chronic pain is usually represented as a struggle, with limited focus on the ability to successfully self-manage and live a meaningful life, and that there is limited emphasis on nonpharmacological strategies. The authors recommend that NZ healthcare providers and researchers work collaboratively with the news media to provide evidence-based information regarding nonpharmacological as well as pharmacological pain management strategies.

Comment (GL): This is very much a locally relevant paper. It’s very true that what is published in the media is often taken as gospel, and there is previous evidence that health-related information can markedly impact public behaviour (e.g., toilet roll panic buying). The authors used a novel content analysis approach to determine how chronic pain is portrayed in the NZ media. There was some bias in the outcomes as a there was a lot of discussion regarding the legalisation of cannabis and medicinal cannabis products during the data collection period. Given the innate nature of journalists to be provocative and sensationalist, it is perhaps not surprising that the majority of reports regarding medicinal cannabis focussed on individual positive experiences and neglected the scientific evidence or views from healthcare providers. While a good number of articles indicated people with chronic pain were looking for a quick fix, I found it pleasing that 40% of the articles included active nonpharmacological management approaches. Overall, the article provides a good framework to guide public education regarding chronic pain and its management, and will hopefully highlight to the powers that be the limited access to specialist pain services in NZ.


Abstract

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