Prescribing analgesia for the surgical patient

Introduction

One of the responsibilities of a surgical house officer is to manage patients' pain during the perioperative period. This is important for humanitarian reasons and because good pain relief has significant physiological benefits (*Table 1*).

Assessment of pain

There are several methods of assessing acute pain. These can be helpful in deciding which analgesics to prescribe (*Table 2*).

Pharmacological management: systemic analgesia

The 'analgesia ladder' is a tool used to increase and decrease the amount of analgesic given. Initially devised for cancer pain this method has been widely adapted for managing perioperative pain on the wards. Immediately after surgery, patients will need strong analgesia with the aim of 'stepping down the ladder' as the postoperative days progress (*Figure 1*). The three broad categories of analgesics are listed with their uses and side effects in *Table 3*. Not included in this table are other analgesic techniques such as discussion (e.g. reassurance and explanation), entonox and local anaesthesia (nerve block, wound infiltration, and spinal or epidurals). Ideally the intramuscular route should be avoided as it is painful and absorption is very variable. In an acute situation intravenous routes are most efficacious, but otherwise oral analgesia is advocated unless the patient is vomiting or within 2 hours of surgery.

Table 1. The potential benefits of treating acute pain

Change	Function
Reduced	Sympathetic activity
	Incidence of acute coronary syndromes
	Risk of tachycardia and dysrhythmias
	Respiratory complications
	Thromboembolic events
	Chronic pain syndrome
Improved	Patient satisfaction
	Wound healing
	Mobilization
	Earlier hospital discharge

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Table 2. Methods of assessing acute pain

Score/method	Aspect assessed
Visual analogue scale (VAS)	Scored between 'no pain' and 'pain as bad as it can be'
Verbal response score (VRS)	Either correlated to words, e.g. mild, severe, excruciating, or to a number, e.g. 3 out of 5
Autonomic response	Tachycardia, hypertension, sweating
Dynamic pain scores	Pain on movement; ability to take a deep breath; ability to cough

Managing the side effects of opioids in the elderly

Side effects from opioids are more common in older people. The best strategy in treating significant opioid side effects is to reduce the dose by 25–50%.

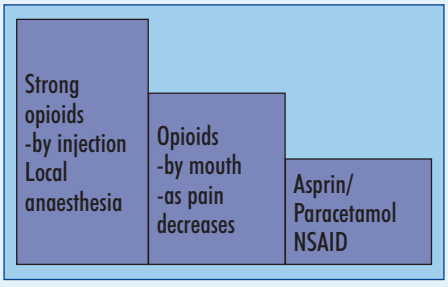
Constipation

Give a laxative and stool softener.

Confusion

Further doses should be withheld until the delirium resolves. A lower dose, shorter acting agent can be used instead. Check for other causes of confusion such as electrolyte abnormalities, hypoxaemia, dehydration and infection.

Figure 1. The World Federation of Societies of Anaesthesiologists analgesic ladder. Local anaesthesia = epidural, spinal, peripheral nerve or wound block. From Charlton (1997). NSAID = non-steroidal anti-inflammatory drug.



Nausea

Possible agents to reduce nausea include antihistamines, anticholinergic and dopamine antagonists anti-emetics (be aware of side effects of sedation, urinary retention and extrapyramidal effects).

Respiratory depression

Respiratory depression (classified as <8 respirations per minute) is usually preceded by sedation. Sedation should be monitored so that excess dosing of opioids can be identified. In an emergency naloxone 200–400 μg titrated to effect is the treatment of choice.

Epidurals

Epidural infusions of local anaesthetic (often with an opioid, e.g. fentanyl) provide great pain relief, and decrease respiratory complications, the risk of venous thrombosis and short-term morbidity. They are usually sited by the anaesthetist in theatre and left in for a few days after surgery. Coagulation must be normal before their insertion or removal to prevent an epidural haematoma, so low molecular weight heparin should not be given within 12 hours of either event. The acute pain team usually manages the infusion rate (typically 5–15 ml/hour). Intravenous (IV) fluids need to be given and urinary catheterization may be required. Before removal, alternative analgesia needs to be started.

Patient-controlled analgesia

Patient-controlled analgesia (PCA) is an effective way of providing opioid analgesia where the patient titrates the dose to his/her need by pressing a button that delivers

Table 3. Uses and characteristics of commonly used analgesic drugs

Class	Drug	Type of pain	Dose*	Special points and common side effects	Routes of administration
Simple analgesic	Paracetamol	Mild	1g qds, maximum 60 mg/kg per 24h	Good antipyretic, not anti-inflammatory Potential hepatotoxicity in overdose	PO, PR, IV
	NSAIDs	Mild/moderate especially superficial pain, musculoskeletal and with inflammatory component IV diclofenac effective in renal colic but check renal function	Diclofenac 50 mg tds Ibuprofen 200–600 mg tds (maximum 2.4 g in 24 hours)	Risk of renal failure especially in the elderly and dehydrated. Increased bleeding tendency and ulcer or GIB – use omeprazole 20 mg prophylaxis in high risk. Avoid in high risk patients – elderly, previous history of GIB/PUD, IHD and in the first 24 hours after major surgery	PO, PR, topical and rectally thought to have less GI s/e IV – can cause thrombophlebitis No evidence that NSAIDs given PR or IV are better than the same drug at the same dose given PO
Weak opioids	Codeine	Moderate Minor surgical procedures	15–60 mg qds, max 240 mg/24 hours	Good in combination with paracetamol s/e constipation, N/V dizziness	Oral IM (avoid if possible)
	Tramadol	Moderate	50–100 mg qds	Not with other opioids. Less addictive therefore very useful in problem drug users s/e dizziness, dysphoria esp. in elderly	Oral, IV, IM
Strong opioids	Morphine sulphate	Severe, visceral and for deep structural procedures	0.05–0.1 mg/kg IV* 0.1–0.2 mg/kg IM 0.2–0.4 mg/kg PO	IV route best for immediate pain relief s/e respiratory depression, N/V constipation, confusion and decreased consciousness	Oral, sublingual (buprenorphrine) IM, IV, patient-controlled analgesia (cont IV/bolus) Epidural and spinal

*Dose for 70kg adult. GI = gastrointestinal; GIB = gastrointestinal bleed; IHD=ischaemic heart disease; IM = intramuscular; IV = intravenous; NSAID = non-steroidal anti-inflammatory drug; N/V = nausea and vomiting; qds = four times a day; PO = oral; PR = rectal; PUD = peptic ulcer disease; s/e = side effects; tds = three times a day. Always check the dose in the British National Formulary. * see local protocol

a small bolus (e.g. 1 mg morphine). It is safe, has a high patient satisfaction and is usually set up by the anaesthetist in theatre. Normally managed by the acute pain team it is used postoperatively until the patient can tolerate oral analgesia. For safety, a separate IV line is required with a non-return valve and crystalloid infusion at 30 ml/hour to keep the line patent.

Case examples

Case scenario 1

A fit and well 40-year-old woman has had an inguinal hernia repair in day surgery. She is unable to be discharged because of her pain, and so has to stay in overnight. What analgesia is appropriate?

Potential solutions

The first option is regular paracetamol 1 g four times daily (qds) and NSAID. If the patient is nil by mouth titrate IV morphine in 1–2 mg boluses every 5 minutes until pain free: stay with the patient while you do this. Write oral morphine every 3–4 hours at the dose shown in *Table 3*. Ensure IV fluids and adequate antiemetics are prescribed. If pain is not controlled with oral morphine contact the 'acute pain team' to set up PCA.

Case scenario 2

A 23-year-old intravenous drug user is admitted for incision and drainage of an abscess. What analgesia should be used?

Potential solutions

Regular oral (or rectal) paracetamol and NSAIDs can still be taken up to 2 hours preoperatively. Check whether the patient is on methadone – he will have a named contact or check the dose with his GP – write up regularly. Be sure about the dose. If the dose cannot be confirmed contact the drug dependency unit or pain team.

Try tramadol 100 mg qds (tramadol can be given IV or oral) or morphine (avoid giving IV) for breakthrough pain. Contact the pain team for advice – PCA may be appropriate. Be aware of withdrawal symptoms. Non-pharmacological interventions may be used if appropriate (e.g. transcutaneous electrical nerve stimulation or acupuncture), but IV drug users often have a low threshold for these. Local anaesthetics may be an option.

Case scenario 3

An 87-year-old woman has been admitted with a fractured femur, a history of hypertension and type 2 diabetes. She is mildly confused. What pain relief can you offer?

Potential solutions

Regular paracetamol. Check her renal function before prescribing NSAIDs. If within normal range can prescribe ibuprofen 200 mg three times a day. Ensure IV fluids prescribed and urinary output monitored. Prescribe a mucoprotective agent, e.g. omeprazole 20 mg once daily. Oral morphine can be given every 3–4 hours at the dose shown in *Table 3*.

PCA is probably not the best option as she is confused and may not be able to use it effectively. However, depending on nursing resources she could use nurse-controlled analgesia. She may benefit from a local nerve block by an anaesthetist. BJHM

Conflict of interest: none.

Charlton JE (1997) The management of postoperative pain. *Update in Anesthesia* **7**: 2–17

Further reading

British Pain Society (2006) *Pain and Substance Misuse: Improving the Patient Experience.* British Pain Society, London (www.britishpainsociety.org/misuse_0806.pdf)

KEY POINTS

- Regular simple analgesia is useful in pre-empting or anticipating pain.
- Regular review of the analgesic regimen is important.
- Non-steroidal anti-inflammatory drugs are opioid sparing, use the lowest possible effective dose with a mucoprotective agent.
- Do not be afraid to give intravenous morphine according to your local hospital guidelines: stay with the patient and titrate in small boluses.
- Always try to maintain the oral analgesic route especially with drug problem patients.
- Methadone is an opioid and can cause opioid overdose with increasing doses.
- Liaise with the acute pain team early.