Premedication and management of concomitant therapy

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Abstract

The management of patient's co-existing illnesses, including decisions about their normal medication is an important part of patient's perioperative care. Adequate preoperative assessment, preparation and liaison with other healthcare professionals are essential to decrease patient morbidity and mortality and prevent unnecessary surgical delay or suboptimal management. A full medication history including prescribed, over the counter and complementary medications is crucial, along with the need to make decisions regarding which medications should be omitted, have dose alterations or formulation changes to account for nil-by-mouth status. Medications may need to be prescribed in addition to the patient's normal medications, for example thromboembolic prophylaxis. This article summarizes current recommendations with regard to premedication and concomitant medication.

Keywords Concomitant therapy; medications; preoperative assessment

Introduction

Almost half of patients presenting for surgery in Western societies take regular medications. Many of these have important interactions and effects on the nature and conduct of both anaesthesia and surgery. Historically, there has been a lack of standard management of perioperative medication, reflecting in part systemic inefficiencies and individual variation in medical decision making. The changing nature in overall management of complex systems for hospital admission, surgical scheduling, and general perioperative care provides an incentive to standardize management of many elements of care, including medication management. The parallel development of preoperative assessment clinics provides an opportunity to provide a structured and consistent approach to the management of medications in the perioperative period, which in turn enables the increasing use of day of surgery admissions, day case surgery, and safe use of complex medication regimes (e.g. novel anticoagulants, potent anti-hypertensives).

In general, patients are fasted prior to elective surgery to reduce the risks of intraoperative regurgitation and pulmonary aspiration. The recommended fasting times are 6 hours for solid food, carbonated drinks and infant formula, 4 hours for breast milk, and 2 hours for carbohydrate-rich drinks, clear non-particulate and non-carbonated fluids including tea/coffee with a small amount of milk.[1] Most medications can be given with a small sip of water, up to 30 ml is acceptable.

Another important consideration is an appreciation of the effective clinical duration of each medication, and the consequences of continuing or halting administration in the perioperative period. So, a long-acting drug with unwanted perioperative effects (e.g. clopidogrel) should be stopped for a longer period than a short-acting drug with similar effects (e.g. apixaban). Some medications (e.g. beta-blockers, antipsychotics) may be best continued in a different preparation if a patient is either unable to manage oral intake or has insufficient gut function to enable absorption.

Specific drugs used preoperatively

Anxiolytics

Due partly to improvements in anaesthetic induction agents, anxiolytics and sedative agents are less commonly required as routine 'pre-meds', although short-acting benzodiazepines, (e.g. midazolam) may occasionally be prescribed by the anaesthetist for patients when reassurance alone does not allay their anxiety. This is more common in paediatric practice, or as part of a procedural sedation technique. It is still common to prescribe a benzodiazepine premedication in cardiac surgery if the patient is haemodynamically stable.

Prophylaxis against aspiration

The recommended fasting guidelines mentioned help reduce the risk of aspiration of gastric contents and subsequent risk of pneumonitis in elective surgery. Patients at increased risk are those who are pregnant, have a BMI > 30, a history of symptomatic hiatus hernia or dyspepsia and those with diabetes mellitus. Patients who currently take acid suppressants such as ranitidine and lansoprazole should continue to take these drugs as normal.

There is insufficient evidence to recommend the routine use of antacids, metoclopramide or H_2-receptor antagonists before elective surgery in non-obstetric patients, but an H_2-receptor antagonist should be given before elective caesarean section, with an intravenous H_2-receptor antagonist given prior to emergency caesarean section, supplemented with 30 ml of 0.3 mol l^{-1} sodium citrate if general anaesthesia is planned.[1]

Anti-sialogogues

Anti-sialogogues (e.g. atropine, glycopyrrolate) are used to decrease oropharyngeal secretions and are sometimes prescribed by anaesthetists particularly if an awake fibre-optic intubation is planned, although this is commonly given intravenously, or if anaesthesia or procedural sedation with ketamine is planned. Some patients with cerebral palsy will take an anti-sialogogue as part of their routine medication, and this should be maintained.

Analgesia

Patients should be encouraged to take their usual regular analgesia, including opiates; any patient in pain should be prescribed suitable analgesia prior to theatre. Oral analgesia can be taken

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with a small sip of water without compromising fasting. *Partial opioid agonists* such as buprenorphine should be discontinued preoperatively because they can block the effects of other opiates given perioperatively. A buprenorphine patch should be removed 7 days preoperatively and alternative opiates prescribed. Usual opiate medications, including fentanyl patches, should generally be continued. Remember that any patch will only work safely if skin perfusion is good — a very unwell patient should be given medications via a different route.

Non-steroidal anti-inflammatory drugs (*NSAIDs*) are reversible inhibitors of cyclooxygenase which have anti-platelet effects due to reduced concentration of thromboxane A2. They have the potential for nephrotoxicity and gastric mucosal ulceration. They should be discontinued in patients at high risk of bleeding, those with renal impairment, and after major surgery when significant fluid shifts and splanchnic hypoperfusion may occur.

Pre-emptive analgesia is the administration of analgesia prior to the onset of a painful stimulus. There is some evidence that this decreases pain receptor activation and the production and activity of pain neurotransmitters. In addition to simple analgesia, gabapentin is sometimes prescribed preoperatively. Increasingly, pre-emptive analgesia is used as part of enhanced recovery programmes, although overall, the evidence for long term benefit from pre-emptive analgesia is not compelling.[2]

Preoptimization

Iron deficiency anaemia should be corrected with oral iron over at least 6 weeks before surgery in the elective patient. Intravenous iron may be considered where there is insufficient time for oral iron to work or if there are gut absorption problems.

Carbohydrate-rich drinks are used in enhanced recovery programmes and should be given at least 3 hours before anaesthesia.

Concomitant therapy

Cardiovascular medications

Up to half of all patients presenting for surgery take medication, the largest group of which are drugs to manage cardiovascular disease.

ACE inhibitors (*ACEI*) *and angiotensin II receptor blockers* (*ARB*): patients taking ACE1 and ARB drugs for hypertension are at risk of profound hypotension intraoperatively. These drugs are generally omitted on the day of surgery. In patients who take ACEI and ARB drugs as a treatment for heart failure, cessation may worsen cardiac function and this decision should be considered on a case-by case basis.[3]

Beta blockers: patients on long term beta blockers should continue to take them. Beta blockers have a cardio-protective effect in those with cardiac disease but beta blockers may increase the rate of perioperative strokes.[4]

Calcium channel blockers/nitrates/alpha 2 agonists should be continued preoperatively.

Digoxin should be continued preoperatively, though special consideration should be given to patients who develop worsening renal function and levels checked.

Diuretics: bendroflumethazide is often used as a first-line antihypertensive. Some units will continue this as it has little impact on the anaesthetic and helps control blood pressure on the morning of surgery. Other units omit this on the morning of surgery as it can make it difficult for elderly patients travelling to hospital for day of surgery admission whilst managing the effects of diuresis. Either option is reasonable.

Patients taking furosemide, spironolactone and other diuretics for heart failure should continue these both before and after surgery.

It is important that any patient using diuretic medication has electrolytes and renal function checked preoperatively and frequently in the postoperative phase. Any diuretic will increase the dehydration of a patient, particularly when fasting.

Statins may prevent vascular events through mechanisms including reduced inflammation and plaque stabilization. There is evidence that statins may be cardio-protective, and current recommendations are that chronic treatment should continue, while patients having vascular surgery should have statins started at least 7–10 days preoperatively.

Nephrotoxic drugs

ACE1, ARBs, diuretics, gentamicin and intravenous contrast agents can be nephrotoxic and their use should be carefully considered perioperatively in patients at risk of renal impairment, particularly if co-administered with a NSAID. In general, it is best to avoid a combination of these drugs, wherever possible.

Anti-coagulants

Anti-coagulants are prescribed for a range of medical problems from cardiovascular disease to thromboembolism or stroke prophylaxis. Continuing these medications is associated with an increased risk of perioperative bleeding but cessation may increase the risk of thromboembolism.

Anti-platelet drugs include aspirin, clopidogrel, prasugrel, ticagrelor and dipyridamole. *Aspirin* is an irreversible inhibitor of platelet cyclo-oxygenase. A large proportion of perioperative acute coronary syndromes have been attributed to abrupt cessation of aspirin, so as a general rule, this should be continued up until the day of surgery. For patients undergoing surgery where perioperative haemorrhage may be catastrophic (e.g. neurosurgery) aspirin can be stopped for 7 days pre-operatively. This risk/benefit judgement is made on a case-by-case basis with the surgical team. However, in many cases, even where high blood loss is anticipated, low-dose (75 mg) aspirin is now maintained throughout the perioperative period. High-dose aspirin (300 mg) should be discontinued or the dose reduced, at least 7 days preoperatively.

Clopidogrel is a platelet P2Y12 receptor blocker. It is often administered following the insertion of coronary stents as part of dual anti-platelet therapy and as a treatment for peripheral vascular disease. Dual anti-platelet therapy is often recommended for 12 months following percutaneous coronary interventions. Stopping clopidogrel within 6 weeks of bare metal stents or 12 months of drug-eluting stents carries an increase in risk of stent thrombosis, which may be catastrophic. Elective surgery should be postponed whenever possible until the minimum duration of therapy is completed. If clopidogrel must be stopped due to the risk of perioperative bleeding in more urgent cases (e.g. cancer), then seeking advice from a cardiologist regarding the risk of that specific stent thrombosing is

