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Saturday May 28, 2005 15:00-15:45 Room G

UPDATE ON PAIN MANAGEMENT

One of the most significant changes in surgical practice during the last two decades has been the growth of ambulatory surgery. In the United States over 60 % of the 79 million surgical procedures performed each year occur in an ambulatory care setting [1]. In England the proportion of ambulatory surgery as a percentage of elective surgery has increased from 34 % in 1989-1990 to 65 % in 1998-1999 [2]. However, international figures show wide variations between countries, for example in 1996-1997 the percentage for ambulatory inguinal hernia repair was 6-7 % in Belgium and France compared with 83 % in USA. For varicose vein surgery the percentage was 12 % in Australia and France compared with 88 % in USA [3].

Adequate postoperative analgesia is a prerequisite for successful ambulatory surgery. Contrary to the common belief that ambulatory surgery is associated only with mild pain, recent studies have shown that under treatment of pain is common. About 30-40 % of discharged outpatients may suffer from moderate to severe pain during the first 24-48 hours [4,5]. A recent literature review showed that 45 % of ambulatory surgery patients experienced pain at home [6]. Postoperative pain is the most common reason for delayed discharge, contact with family doctor and the main reason for unanticipated hospital admission [7]. Severe postoperative pain causes extreme discomfort and suffering and also prevents sleep, which contributes to postoperative fatigue [4,8]. Pain at home also has economic implications due to increased demand on community health services and delayed return to daily activities and employment [7].

Based on results from 2 surveys McGrath et al concluded that the problem of pain might be increasing due to increasing complexity of ambulatory surgery. In spite of implementation of a multimodal analgesia regimen after their first survey the incidence of moderate to severe pain increased from 26 % to 30 % and the incidence of severe pain increased two-fold. This is presumably due to recent inclusion of more painful procedures such as laparoscopic cholecystectomy and microdiscectomy [7]. Rapid recovery following the use of short-acting anesthetic agents has led to the concept of fast-tracking by bypassing the post anesthetic care unit (PACU). However, the success of fast-tracking depends to a considerable extent on effective postoperative pain management. The cost saving of outpatient surgery may be negated by unanticipated hospital admission for poorly treated pain [9].

Lengthy surgical procedures and certain types of operations (orthopaedic, urological, anorectal, hernia repair, breast augmentation, laparoscopic cholecystectomy, ENT, dental) are predictors of severe pain and can be expected to produce greater analgesic requirements [4,5]. The intensity of acute postoperative pain may predict the development of chronic pain after leg amputation, breast surgery, and thoracotomy. Chronic pain is a significant problem after open groin hernia repair; the reported incidence varies from 0-37 %. The intensity of early postoperative pain may be an important predictor for development of chronic pain [10].

CHOICE OF ANESTHETIC TECHNIQUE AND PERIOPERATIVE ANALGESIA

Safety, fast recovery and minimal postoperative problems are essential in selecting surgical procedures and anesthesia techniques for day-case surgery. The choice of anesthetic technique can influence postoperative morbidity at home.

The role of opioids in day-case surgery is controversial because of their well-known side effects such as nausea and vomiting. At equi-analgesic doses the emetic effects of all opioids appear to be similar. There is good evidence that avoidance of opioids virtually abolishes the postoperative complaints of nausea and vomiting that preclude oral intake of fluids after surgery.

Does regional anesthesia offers significant benefits over general anesthesia for ambulatory surgery? Literature presents conflicting reports; however, its real place will vary from one institution to another [11]. All general and regional anesthesia techniques have their own advantages and disadvantages.

In many day-care patients regional anesthetic techniques might be preferable. Regional anesthesia can reduce or avoid the hazards and discomforts of general anesthesia, including sore throat, airway trauma and muscle pain. Regional anesthesia, whether by epidural, spinal, peripheral nerve blocks or field block techniques, offers a number of advantages to outpatients undergoing surgery. These techniques provide analgesia without sedation, earlier discharge and prolonged postoperative analgesia. Local or regional anesthesia can be used alone, in combination with sedation techniques or as part of balanced analgesia with general anesthesia.

Surgeon and patient acceptance of the technique and the expertise of the anesthesiologist are crucial. It is essential that each facility audit its own complication rates, recovery room times and patient opinions to determine the place of regional or general anesthesia. Day surgery performed under local anesthesia is often the simplest, safest, and cheapest [11]. However, regional anesthesia also has some disadvantages. It may take additional time and requires active co-operation of patient and surgeon. Induction may be associated with minor discomfort; also there is a risk of complications specific to each block and to the local anesthetic drug selected. Not all patients are suitable for regional anesthesia. Difficulties in performing the block and movement during surgery can be a problem in the very anxious patient. If the block fails, the surgeon may be able to supplement with additional local anesthetic and the anesthesiologist must be on stand-by to allow swift and safe conversion to general anesthesia [11].

STRATEGIES FOR POSTOPERATIVE PAIN MANAGEMENT

Optimal postoperative pain control for day-case surgery should be effective and safe, produce minimal side effects, facilitate recovery, and be easily managed by patients at home [11]. Analgesia techniques should permit "normal" activities, and additional analgesic supplements should be provided to cover any painful activity. Rescue analgesia medication should be provided in case the prescribed analgesic is ineffective. It has been shown that the use of pre-packaged take-home analgesics specific to the type of surgery can lead to improved pain control, mobility, and sleep. Patients should be informed about the need to treat pain and about the various methods available to manage pain. The information should be given verbally and in writing. Day patients with severe pain at home do not always take their medication as prescribed and may even mix in their own analgesics. Clear instructions are therefore mandatory (Table 1).

TABLE 1 - DAY-CASE SURGERY – PRE-DISCHARGE INFORMATION

- Explain that 20-40 % patients may have moderate to severe pain at home and that it can last 2-4 days
- Advise patients on how to manage pain (which drug(s)?; how often?) and side effects if analgesic drugs
- Provide (or prescribe) breakthrough analgesic (and antiemetic) in addition to regular medication to last 2-4 days
- Advise patients to take analgesic before the effect of single dose local anesthetic wears off
- Encourage parents to use a pain assessment tool to optimise paediatric pain control
- Explain that postoperative tiredness and drowsiness are common and in some patients last several days
- Provide telephone number and pager number of physician to be contacted if necessary
- Inform that surgeon or nurse will make follow-up call on the day after surgery

PAIN ASSESSMENT AND DOCUMENTATION

Pain intensity must be assessed and reassessed frequently and documented on the bedside chart ("make pain visible"). The day care facility should define a maximum acceptable pain score and train the personnel to treat pain promptly if it is above that level.

If a child's pain is treated at home, parents have to estimate the level of pain and need to be educated appropriately. Pain assessment tools have been formulated and validated for parents to use at home. Documentation of pain scores also allows the Day Surgery Unit (DSU) to perform regular audit to check that pain management techniques are not causing problems at home after discharge.

CHOICE OF ANALGESIC DRUGS AFTER DISCHARGE

Oral analgesics are the mainstay of continuing pain control at home and it is important to encourage patients to take the drugs pre-emptively and regularly, starting before local anesthetic effect has worn off [11]. For mild pain, simple analgesics such as paracetamol may be sufficient. Patients with mild to moderate pain in day surgery benefit from combinations of NSAIDs and weak opioids (most commonly codeine and dextropropoxyphene) in addition to regional or local anesthesia. The patient response to drugs varies, so rescue analgesia may be needed. Strong opioids are generally avoided because of their well-known side effects including the risk of respiratory depression.

Paracetamol is the most commonly used analgesic worldwide because it is effective, cheap and safe. It is often combined with other drugs such as weak opioids and NSAIDs as part of a balanced analgesic approach. The effectiveness of paracetamol is often underestimated because it is not administered correctly. The currently recommended rectal and oral doses are the same. However, the rectal dose should be higher than the oral dose because of poor and erratic absorption of paracetamol from suppositories.

Weak opioids such as codeine and dextropropoxyphene are commonly used, usually in combination with paracetamol. Tramadol is believed to have a potency equal to that of pethidine without causing significant respiratory depression; its main drawback is a high incidence of nausea and vomiting. The recently introduced combination of a smaller dose (37.5 mg) of tramadol with paracetamol was shown to have a reduced incidence of tramadol side effects while the analgesic efficacy was maintained [12].

Non-steroidal anti-inflammatory drugs (NSAIDs) are now the basis of most day surgery analgesic regimens. As well as providing effective analgesia, their anti-inflammatory effects may help reduce local oedema and minimise the use of more potent drugs with their accompanying side-effects. NSAIDs have several advantages in the perioperative period. They are effective as the sole analgesic in many cases of mild to moderate pain. They can enhance the quality of opioid-based analgesia and often diminish opioid requirements by about 25 %. Some studies have shown that they may reduce opioid-related side effects.

NSAIDs are frequently used to treat mild to moderate pain and as a component of “balanced analgesia” for moderate to severe pain. In 1998 the Royal College of Anaesthetists gave guidelines for the use of NSAIDs in the perioperative period. Based on the strongest evidence available it is stated that “In situations where there are no contraindications, NSAIDs are the drug of choice after many day-case procedures” [13]. However, controversy still surrounds their use due to significant gastrointestinal, haematological and renal side effects. Controversy also surrounds the use of cycloxygenase-2 (COX-2) inhibitors (coxibs). These drugs appear to be as effective as nonselective NSAIDs in suppressing inflammation and providing analgesia, while reducing the incidence of upper gastrointestinal ulcers to that seen with placebo. The recent withdrawal of rofecoxib following reports of serious cardiovascular complications has started a new debate about the risk-benefit ratios of coxibs.

Overall the benefits of NSAIDs greatly outweigh their risks. Choice of drug will depend on availability, desired route of administration (oral, rectal, i.v.), duration of analgesia and cost.

REGIONAL TECHNIQUES AT HOME

Wound infiltration with local anesthetics is effective and safe but the analgesia lasts only a few hours. We have described a catheter technique using an elastomeric balloon pump which allows the patient to self-administer local anesthetic analgesia at home [14]. Self-administered local anesthetic techniques using incisional [14], perineural [15,16,17] or intra-articular [18] catheters connected to disposable pumps provide high-quality analgesia but require appropriate patient selection, a good support organization and 24 h access to hospital care.

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