

Management of postoperative pain

Severe pain is a common sequela of intrathoracic, intra-abdominal, and major bone or joint procedures. About 60% of such patients perceive their pain to be severe, 25% moderate, and 15% mild. In contrast, following superficial operations on the head and neck, limbs, or abdominal wall, less than 15% of patients characterize their pain as severe. The factors responsible for these differences include duration of surgery, degree of operative trauma, type of incision, and magnitude of intraoperative retraction. Gentle handling of tissues, expedient الوسيلة operations, and good muscle relaxation help lessen the severity of postoperative pain.

Postoperative pain serves no useful purpose and may cause alterations in pulmonary, circulatory, gastrointestinal, and skeletal muscle function that set the stage for postoperative complications. Pain following thoracic and upper abdominal operations, for example, causes voluntary and involuntary splinting of thoracic and abdominal muscles and the diaphragm. The patient may be reluctant to breathe deeply, promoting atelectasis. The limitation in motion due to pain sets the stage for venous stasis, thrombosis, and embolism. Release of catecholamines and other stress hormones by postoperative pain causes vasospasm and hypertension, which may in turn lead to complications such as stroke, myocardial infarction, and bleeding. Prevention of postoperative pain is thus important for reasons other than the pain itself. Effective pain control may improve the outcome of major operations.

The methods of prevention are:

- Adequate analgesia by intravenous narcotic drugs at the time of surgery;
- Regional anaesthesia alone or supplementing general anaesthesia during surgery to prevent excitation of central pathways;
- The use of prostaglandin inhibitory drugs during surgery. Diclofenac suppositories are effective in reducing the pain from tissue damage in bone and muscle, and are used at the time of operation.

These three approaches used together are good at preventing the cycle of pain and muscle spasm from becoming established in the recovery period.

The same methods can be used for managing the pain of acute trauma.

Parenteral Opioids

Opioids are the mainstay of therapy for postoperative pain.

They include :

- 1) Morphine. Given typically intravenously by infusion, controlled by an educated patient
- 2) Meperidine is an opioid with about one-eighth the potency of morphine. It provides a similar quality of pain control with similar side effects. The duration of pain relief is somewhat shorter than with morphine.
- 3) Hydromorphone and methadone. Hydromorphone is usually administered in a dose of 1–2 mg intramuscularly every 2–3 hours. Methadone is given intramuscularly or orally in an average dose of 10 mg every 4–6 hours. The main advantage of methadone is its long half-life (6–10 hours) and its ability to prevent withdrawal symptoms in patients with morphine dependence.

Nonopioid Parenteral Analgesics

Ketorolac tromethamine is a nonsteroidal anti-inflammatory drug (NSAID) with potent analgesic and moderate anti-inflammatory activities. It is available in injectable form suitable for postoperative use. In controlled trials, ketorolac (30 mg) has demonstrated analgesic efficacy roughly equivalent to that of morphine (10 mg). A potential advantage over morphine is its lack of respiratory depression.

Oral Analgesics

Within several days following most abdominal surgical procedures, the severity of pain decreases to a point where oral analgesics suffice. Aspirin should be avoided as an analgesic postoperatively, since it interferes with platelet function, prolongs bleeding time, and interferes with the effects of anticoagulants. For most patients, a combination of acetaminophen with codeine or propoxyphene suffices. Hydrocodone with acetaminophen is a synthetic opioid with properties similar to those of codeine. For more severe pain, oxycodone is available in combination with aspirin or acetaminophen. Oxycodone is an opioid with slightly less potency than morphine. As with all opioids, tolerance develops with long-term use.

Patient-Controlled Analgesia

Patient-controlled analgesia (PCA) puts the frequency of analgesic administration under the patient's control but within safe limits. A device containing a timing unit, a pump, and the analgesic medication is connected to an intravenous line. By pressing a button, the patient delivers a predetermined dose of analgesic (usually morphine, 1–3 mg). The timing unit prevents overdosage by interposing an inactivation period (usually 6–8 minutes) between patient-initiated doses. The possibility of overdosage is also limited by the fact that the patient must be awake in order to search for and push the button that delivers the morphine. The dose and timing can be changed by medical personnel to accommodate the needs of the patient. This method appears to improve pain control and even reduces the total dose of opioid given in a 24-hour period. The addition of a background continuous infusion to the patient-directed administration of analgesic appears to offer no advantage over PCA alone.

Continuous Epidural Analgesia

Opioids are also effective when administered directly into the epidural space. Epidural opioids produce intense, prolonged segmental analgesia with relatively less respiratory depression or sympathetic, motor, or other sensory disturbances. Epidural morphine is usually administered as a continuous infusion at a rate of 0.2–0.8 mg/h with or without the addition of 0.25% bupivacaine. Patients managed in this way are more alert and have better gastrointestinal function. Side effects of continuous epidural administration of morphine include pruritus, nausea, and urinary retention. Respiratory depression may occur. Because the patient is unable to urinate, bladder catheterization is almost always required.

Intercostal Block

Intercostal block may be used to decrease pain following thoracic and abdominal operations. Since the block does not include the visceral afferents, it does not relieve pain completely, but it does eliminate muscle spasm induced by cutaneous pain and helps to restore respiratory function. It does not carry the risk of hypotension—as does continuous epidural analgesia—and it produces analgesia for periods of 3–12 hours. The main disadvantage of intercostal blocks is the risk of pneumothorax and the need for repeated injections. These problems can be minimized by placing a catheter in the intercostal space or in the pleura through which a continuous infusion of bupivacaine 0.5% is delivered at a rate of 3–8 mL/h.

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