PREVENTION AND TREATMENT OF POSTOPERATIVE PAIN

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The control of postoperative pain is a major challenge for the anesthesiologists. Indeed, it has been shown that efficient postoperative pain control is not only necessary for the patient's well-being - patient satisfaction (1,2) - but it also has a positive impact on the outcome of surgery, as recently shown by Capdevila et al. (2), who demonstrated that the choice of analgesia technique may influence early rehabilitation after major knee surgery. Moreover, Sentürk et al. (3) were able to show that a good postoperative pain control after thoracotomy decreases the prevalence of chronic pain assessed six months after surgery. In this study, the authors postulated that there is a relation between the intensity of postoperative pain and the appearance of chronic pain.

Among the intravenous pain drugs, opioids - morphine - remain one of the mainstays. Opioids exert their analgesic effect by interacting with the μ receptor. However, opioid analgesic action is limited by their almost exclusive blockade of C fibers and some pain modulation within the central nervous system. The weak blocking action on the A delta fibers explain the lack of efficacy of opioid during movement - mobilization, rehabilitation -. Moreover a growing body of evidence suggest that opioid analgesics can elicit delayed hyperalgesia (exaggerated nociceptive response to noxious stimulation) in experimental models after repeated opioid administration (4) or continuous delivering (5). It has also been shown that a single administration of opioid also induces a long-lasting increase of basal pain sensitivity, leading to delayed hyperalgesia (6). There is now a substantial amount of evidence that glutamate via N-methyl-D-aspartate (NMDA) receptor play a pivotal role in the development and maintenance of central hyperactive states underlying the behavioral manifestations of pain facilitation, such as hyperalgesia, allodynia and spontaneous pain (7). It was shown that ketamine pretreatment in rats can prevent long-lasting hyperalgesia induced by acute administration of fentanyl (8). Usefulness of ketamine has been limited by its undesirable psychic emergence effects and cardiovascular stimulating properties. However, it is becoming increasingly clear that a distinction must be made between the use of high-dose ketamine for anesthesia and the use of low-dose ketamine for analgesic and anti-hyperalgesic effects. A recent review article (9), which included randomized, prospective, controlled, double-blind studies, and reported pain scores was able to demonstrate that continuous pain scores, was able to demonstrate that continuous infusion of 0.3-0.5 $mg.kg^{-1}.h^{-1}$ improves postoperative pain management and reduces opioid related adverse effects. The application of the enantiomer S(+)-ketamine deserves further studies, since this isomer is 3-4 times more potent than R(-)-ketamine for pain relief and at equianalgesia doses produces fewer psychic disturbances and less agitation than R(-)-ketamine or the racemate (10,11).

Nonsteroidal anti-inflammatory drugs (NSAIDs) are part of the armamentarium of the mutlimodal management of postoperative pain and may have a significant opioid-sparing effect after major surgery, since they are able to counteract the actions of the inflammatory mediators released by the surgical trauma. Their use was, however, limited by the non-availability of intravenous preparation and the high incidence of gastrointestinal side-effects. It was shown that surgical trauma results in induction of cyclooxygenase-2 (Cox-2), leading to the release of prostaglandins, which sensitize peripheral nociceptors and produce localized hyperalgesia (primary hyperalgesia) (12). The inhibition of Cox-1 results in upper gastrointestinal bleeding and hematological side-effects (13,14). Therefore, selective Cox-2 may be of great interest in the management of postsurgical pain, particularly with the new injectable formulation (15), which are preferred in acutely painful conditions. Concerns dealing with thromboregulation (Cox-2) (16,17) and inhibition on bone

formation (18) secondary to Cox inhibitors have been raised and further studies are needed to clarify these issues.

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Which statement is wrong ?

A) PCA morphine is superior to other forms of application of morphine for postoperative pain treatment

B) PCA morphine has improved patient satisfaction

C) PCA morphine has decreased postoperative morbidity

D) Regional techniques are superior to PCA morphine

Which statement is not true ?

A) The isomer R(-) of ketamine is less potent than the S(+)

B) Ketamine has been shown to reduce the need of opioid in the postoperative period

C) Ketamine may be useful in preventing hyperalgesia by blocking the NMDA receptor

D) Ketamine interacts with the μ receptor

A patient presents with a chief complaint of pain over and around a scar on the left thigh. On examination, there is an old, well-healed scar on the anterior aspect of the left thigh. The patient states that even light touch causes severe pain. Pinching the area is intolerable. Each of the following terms could describe this pain problem EXCEPT

A) primary hyperalgesia

B) hyperpathia

C) allodynia

D) referred pain

All the following have been identified as algogenic substances EXCEPT

A) serotonin

B) leukotrienes

C) G protein

D) acetylcholine

Which statement does not apply to C fibers ?

A) are mostly nociceptive

B) respond to mechanical, thermal, and chemical stimuli

C) are unmyelinated

D) make up a small proportion of fibers in a peripheral nerve

Receptor types that mediate analgesia does not include

A) delta

B) kappa

C) mu-1

D) mu-2

All the following are examples of nociceptive types of pain EXCEPT

A) inflammation

B) distended viscera

C) fractures

D) phantom limb pain

Advantages of the interscalene approach to blocking the brachial plexus include all the following EXCEPT that

A) it can be performed with the arm in any position

B) it can also block the cervical plexus

C) there is less risk of pneumothorax

D) a low volume of solution is required

The following statements regarding drug interactions with NSAIDs are true EXCEPT that

A) NSAIDs prolong the prothrombin time (PT) in patients on warfarin

B) inhibition of platelet aggregation by NSAIDs makes the patient more susceptible to bleeding

C) There is less risk of gastrointestinal (GI) adverse effects in patients taking steroids

D) omeprazol has been shown to prevent NSAID-induced gastropathy

Select the statement that best describes the action of NSAIDs :

A) NSAIDs have their main activity in the CNS

B) Tolerance may occur with long-term use

C) NSAIDs are potent cycloosygenase inhibitors

D) NSAIDs facilitate neutrophil migration and lymphocyte responsiveness