



شبكة المعلومات الجامعية

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شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم



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التوثيق الالكتروني والميكروفيلم

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بالرسالة صفحات

لم ترد بالأصل

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for pain relief and the early
Extubation after open heart Surgery***

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INTRODUCTION

The international association of pain (IASP) described pain as unpleasant sensory and emotional experience associated with actual or potential tissue damage⁽¹⁾. Pain is described as complex and multi-dimensional human perception, which involves sensory, affective cognitive aspects⁽²⁾.

Pain includes the following facts⁽³⁾:

1. It is unpleasant.
2. It can be localized or generalized.
3. It involves tissue damage.
4. It is a subjective emotional response.
5. The response is determined by:
 - a. Present psychological state.
 - b. Anticipation and past experience of tissue damage.
6. Pain has a protective role which may be recognized acutely.

Pain is accompanied by maneuvers to ameliorate it by reduced movement, shallow breathing and autonomic disturbances^(4,5). Therefore postoperative pain relief techniques are important in improving mobility of the patients with reduced incidence of chest infection and deep vein thrombosis, which could contribute to more rapid and complete recovery^(4,5).

Since 1992, there has been a tremendous increase in the understanding of pathophysiology of acute pain, development of new analgesic drugs and techniques for their administration.

Nevertheless the clinician taking care of acute pain relief is often left in a different position, with an overwhelming amount of data, leaving basic questions unanswered: "choice of treatment modality", "Risk of side effects" and "Degree of surveillance or is it cost effective" ? ⁽⁶⁾.

Types of pain

Pain can be divided into two distinct categories that are physiological pain and clinical pain experienced after frank tissue or nerve injury has occurred ⁽⁷⁾. Physiological pain is well localized, transient and has a high threshold with a stimulus response relationship similar to that of other somatosensation, its fundamental role is to operate as a protective warning mechanism in case of contact with potentially damaging stimuli⁽⁸⁾.

Clinical pain is either inflammatory or neuropathic. The former type pain refers to pain associated with peripheral tissue damage e.g. surgical pain ⁽⁹⁾. The neuropathic type of pain refers to pain associated with nervous system damage ⁽⁹⁾. Both types of clinical pain are characterized by changes in the sensitivity,

notably a reduction in the intensity of stimuli necessary to initiate pain. So that stimuli that would never normally produce pain begin to do so (allodynia)⁽⁹⁾. There is also an exaggerated responsiveness to noxious stimuli (hyperalgesia) and spread of hypersensitivity to non injured tissue (secondary hyperalgesia), so clinical pain differs from physiological pain by presence of pathologic hypersensitivity⁽¹⁰⁾.

Postoperative pain (POP):

POP is extremely complex sensation, which extends beyond nociceptor input and the processing is modulated strongly by emotional element such as fear, anxiety or depression and by previous experience of pain. So attention must be paid to the contribution of these factors⁽¹⁰⁾.

Factors affecting the severity of the POP:

I. Site and type of surgery

In general, upper abdominal surgery produces greater pain than do lower abdominal surgery, which in turn is associated with greater pain than peripheral surgery. The type of pain may differ with different types of surgery. Operations on joints are associated with sharp pain. In contrast, abdominal surgery is associated with two types of pain, a continuous dull aching at rest and sharp

pain during coughing and movement. It is severe in the first 24 hours following surgery then diminishing over the next 24 hours and minimal after three to four days⁽¹¹⁾.

2. Age, gender and body weight

The analgesic requirements of males and females are identical for similar types of surgery, however, there is reduction in analgesic requirements with advancing age. White races need more analgesics than dark races. There is no evidence suggesting that variations in body weight in adult population affect opioid requirements⁽¹¹⁾.

3. Pharmacokinetic variability

After the intramuscular injection of an opioid, there is three to seven fold difference between the patients in the rate at which peak plasma concentration of the drug occur and a two to five fold difference in the peak plasma concentration achieved. This pharmacokinetic helps to explain the relatively poor response to a single intramuscular injection given in the postoperative period⁽¹¹⁾.

4. Pharmacodynamic variability

Although there are widespread pharmacokinetic variations between patients in response to administration of opioids, the major reason for variation in opioid sensitivity is pharmacodynamics i.e. a difference in the

inherent sensitivity of opioid receptors⁽¹¹⁾.

The minimum effective analgesic concentration (MEAC), which represents a steady state of plasma concentration of the opioid at which analgesia is produced, varies four to five folds between individual patients and are affected by age and differences in psychological profile⁽¹¹⁾.

5. Personality and emotional state

The patient personality affects pain perception and response to analgesic drugs. Thus patients with a low anxiety exhibit less POP and require smaller doses of opioid than anxious patients. Postoperative analgesic requirement is reduced if the preoperative events and details regarding the provision of pain relief are fulfilled⁽¹²⁾.

6. Premedication and anaesthesia

When using opioid as premedication or as a part of balanced anaesthesia or using anaesthetic agent with marked analgesic effect as *nitrous oxide*, there will be a reduction in the requirements of the postoperative analgesia⁽¹³⁾.

7. Other factors

Pain in recovery room can be exaggerated by cold, shivering, intravenous infusion, frequent blood pressure

monitoring, central venous pressure catheter and multiple drug injections⁽¹³⁾.

Complications of unrelieved POP:

If POP is allowed to continue, it may result in significant dysfunction in substantial number of organ system, which may progress to organ damage and even failure⁽¹⁴⁾.

The systems affected are:

1. Respiratory System

After chest or abdominal surgery, respiratory dysfunction is the most common and the most important result of pain associated with such situations. The end result is often described in the clinical setting as muscle splinting which means muscle contraction on either side of the incised area in attempt to splint the area to prevent movement, comparable to the way, where one would apply an external splint to a fractured bone⁽¹⁴⁾. This splinting is often associated with partial closure of the glottis, which produces a grunting sound during breathing. The pattern of ventilation is characterized by small tidal volume, and high inspiratory and expiratory pressures. In addition to decrease tidal volume, there is a decrease in vital capacity, functional residual capacity (FRC) and alveolar ventilation. FRC may