

PAIN MANAGEMENT

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OBJECTIVES

- Definition n classification
- Pathophysiology of pain.
- Physiological Effects of pain.
- Pharmacological & non-pharmacological methods of analgesia.
- Principles of pain management.

PATHOPHYSIOLOGY

Pain

PATHOPHYSIOLOGY

Pain:

- An unpleasant sensory or emotional experience associated with actual or potential tissue damage.

Is there any significance of pain

protective

Consequence



11 10:05

Consequence



Classification

- **Physiological**
 - Nociceptive
 - Neuropathic
 - psychological
- **Clinical**
 - Acute
 - Chronic
 - malignant

Battle analgesia

PATHOPHYSIOLOGY

Pain:

- Involves four physiological processes:
 - Transduction
 - Transmission
 - Modulation
 - Perception

PATHOPHYSIOLOGY

Noxious stimulus



NSAIDS → release of inflammatory substances
(PG, Hst, Srn, Bdks, Sub.P)



Transduction

(generation & electrical impulses)



PATHOPHYSIOLOGY

Transmission

(conduction by nerve fibers)

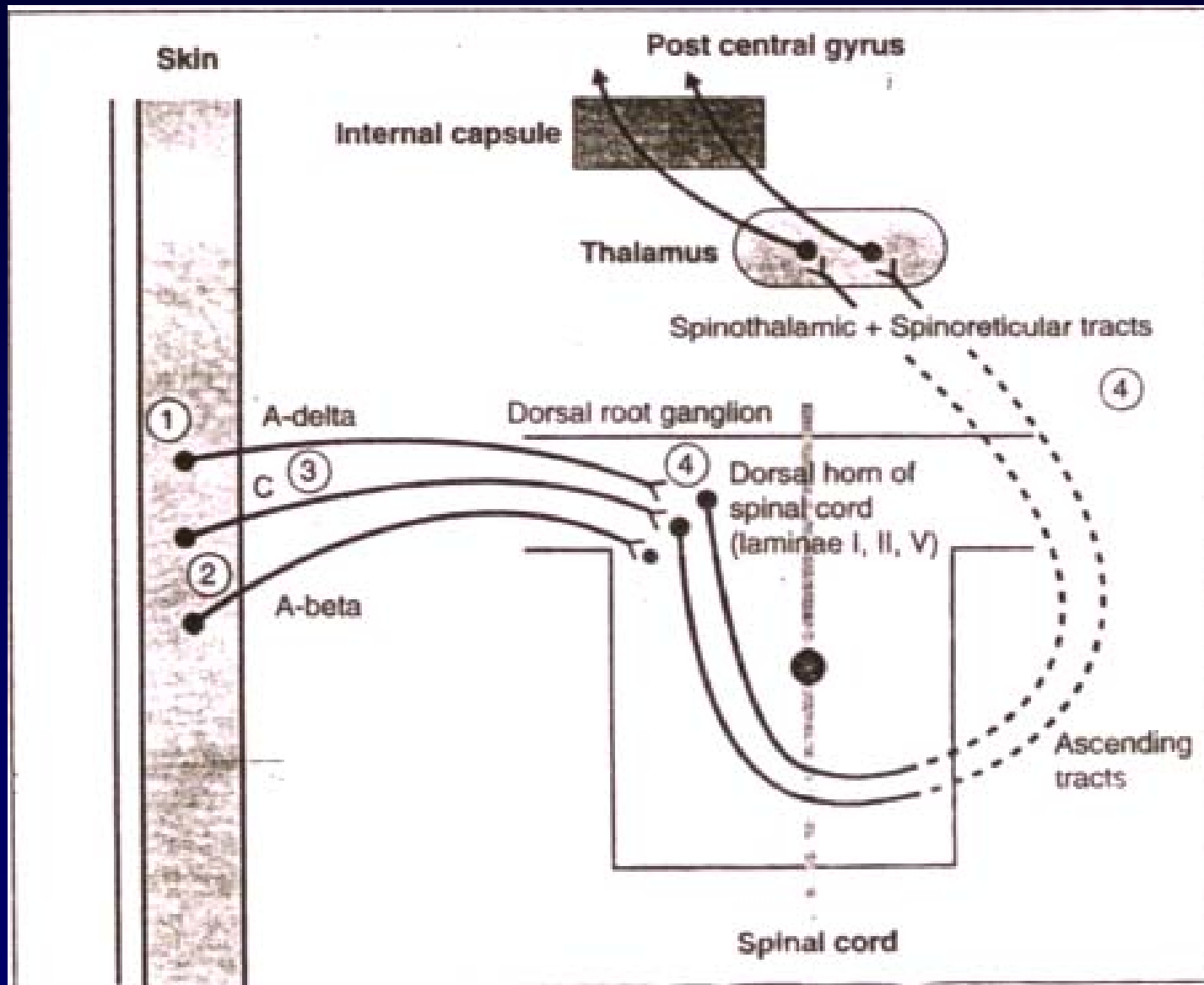


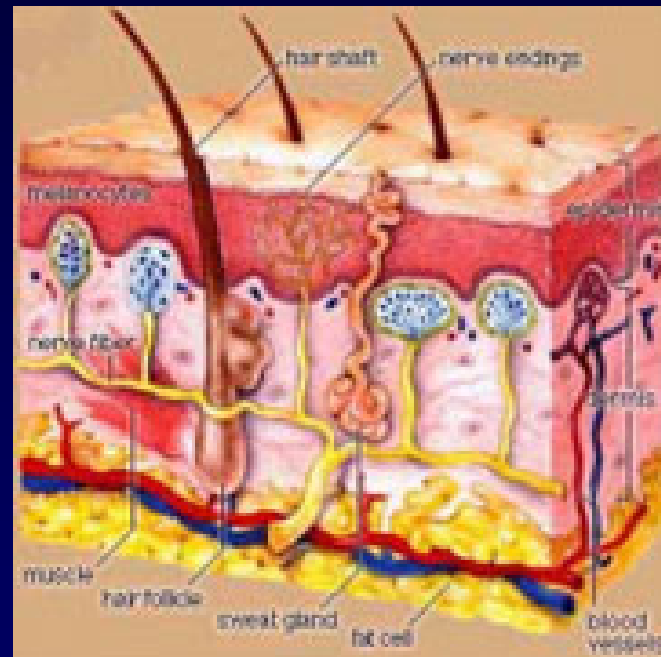
Opioids----> Modulation
(Modification with spinal corel)



Opioids----> Perception

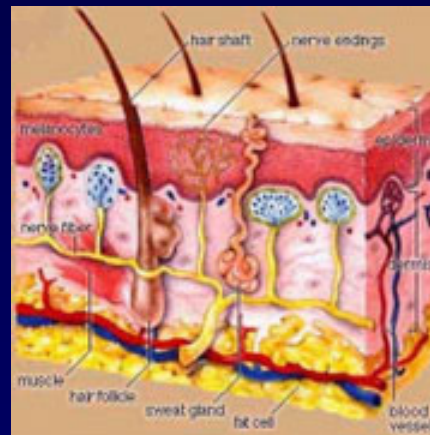
PATHOPHYSIOLOGY





" Those who reject our signs, We shall soon cast into the fire: As often as their skins are roasted through. We shall change them for fresh skins, that they may taste the chastisement. Truly Allah is Exalted in Power, Wise "

- The Holy Quran (4:56)



it was revealed 1424 years ago in
the Holy Qur'an

PATHOPHYSIOLOGY

Site of action	Analgesic/effect
<p>1. Nocioceptors in skin and subcutaneous tissues.</p> <p>Stimulated by inflammatory substances, e.g. PG's.</p>	<p>NSAIDS, block pathways involved in the formatin of inflammatory agents.</p>
<p>2. A-beta fibers</p> <p>Inhibits transmission of pain to higher centers.</p>	<p>TENS stimulate A-beta fibers.</p>
<p>3. Primary afferent neurones (A-delta, C fibers.)</p> <p>Transmit impulses from nociceptors to the spinal cord.</p>	<p>LA e.g. Block transmission of impulses along neurons</p>
<p>4. Dorsal horn of spinal cord and higher centers.</p> <p>Further relay/transmission of painful stimuli to the cerebral cortex.</p>	<p>Opioids, e.g morphine, act as agonists at opioids receptors.</p>

Physiological Effects of Pain

1- Respiratory Effects:

–↓vital capacity

–↓Functional Residual capacity

–↓Ability to cough

–↓Ability to breath deeply

Leading To

- Retention of secretions
- Atelectasis
- Pneumonia

EFFECTS OF PAIN IN POST-OP PATIENT

2- Cardio vascular effects:

- ↑ Sympathetic out put
- ↑ Tachycardia
- ↑ Hypertension
- ↑ Catecholamine blood levels.
- ↑ Myocardial oxygen demand
 - ↑ Risk of ischemia

EFFECTS OF PAIN IN POST-OP PATIENT

3- Neuroendocrine effects:

- ↑ Secretion of catecholamines & catabolic hormones
- ↑ Na and water retention.

4- Effects on mobilization:

- Delayed
- Risk of DVT
- ↑ Hospital stay



METHODS OF CONTROLLING

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graph TD; A[METHODS OF CONTROLLING] --> B[Non-pharmacological]; A --> C[Pharmacological];
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Non-pharmacological

Preoperative counseling

TENS

Acupuncture

Pharmacological

Opioids

- Im
- IV infusion
- IV PCA

Local anaesthetics:

- Local Infiltration
- Nerve Blocks
- Epidural Blocks

NSAIDS

- IM
- IV infusion
- IV PCA

NON-PHARMACOLOGICAL METHODS

PRE-OP COUNSELLING:

Well informed patients about:

- Nature of operation
- Nature of post operative pain
- Methods of analgesia available

Cope better with Post –op Pain

NON-PHARMACOLOGICAL METHODS

TENS

(Trans Cutaneous electric nerve stimulation)

Stimulates afferent myelinated (A-beta) nerve fibers at 70hz



Inhibitory circuits within sp cord activated



Nerve impulse transmission reduced



Maximum benefit in neurogenic pain

PHARMACOLOGICAL METHODS

OPIOIDS

- Activate opioid receptors within the CNS
- Reduce transmission of nerve impulses by modulation in the dorsal horn

PHARMACOLOGICAL METHODS

LOCAL ANAESTHETICS

- Blocks the conduction of nerve impulses
- Can be given with adrenaline because
 - Decreases absorption of L.A allowing larger doses
 - Also acts on alpha 2 receptors which potentiates analgesic effect

PHARMACOLOGICAL METHODS

NASIDS

- Blocks synthesis of PG's
- Only suitable for mild to moderate pain

PRINCIPLE OF MANAGEMENT OF PAIN

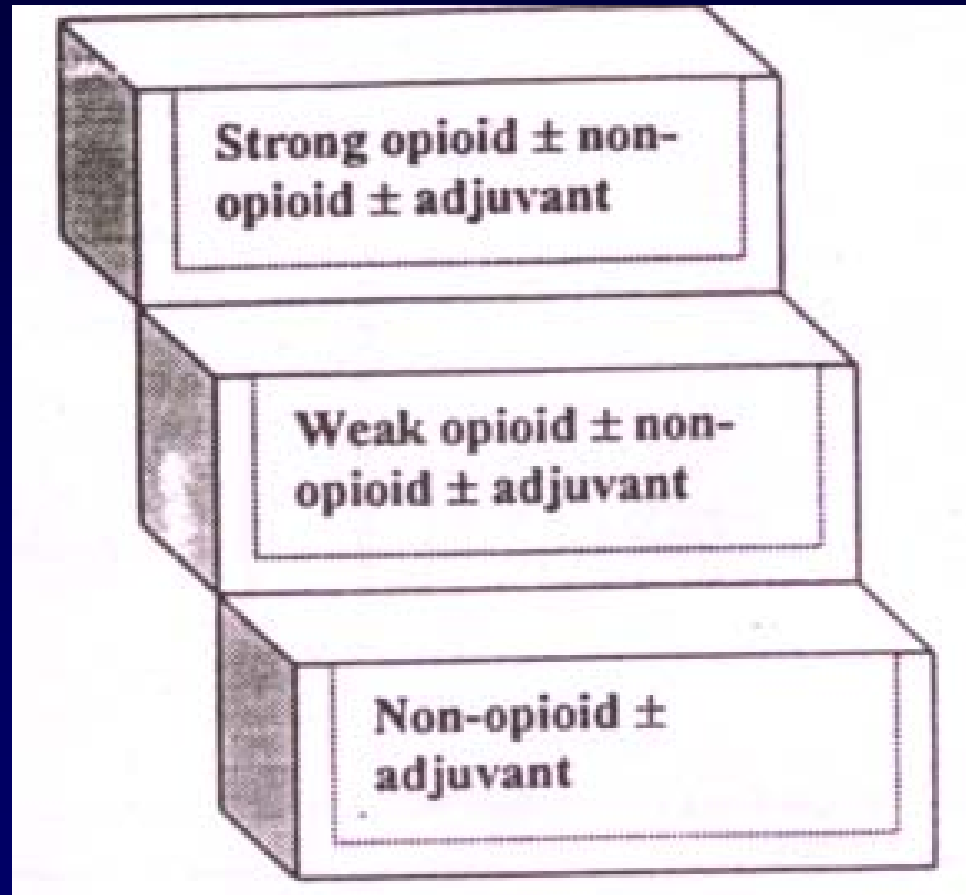
- Pre-emptive analgesia
- Balanced or combination analgesia
- Analgesia ladder

PHARMACOLOGICAL METHODS

Balanced Analgesia

- NASID are used in conjunction with opioids.
- Reduces amount of opioids
- Reduces side affect of opioids

PRINCIPLE OF MANAGEMENT OF PAIN



Modified WHO Analgesic Ladder

Proposed 4th Step



Quality of Life
Invasive treatments
Opioid Delivery

Pain persisting or increasing
Step 3
Opioid for moderate to severe pain
±Nonopioid ±Adjuvant

Pain persisting or increasing
Step 2
Opioid for mild to moderate pain
±Nonopioid ±Adjuvant

Pain persisting or increasing
Step 1
±Nonopioid
± Adjuvant

Pain

The WHO Ladder



ASSESSMENT OF PAIN

- Observe the behaviour of the patient
- Monitor analgesic requirement of the patient
 - Visual Analogue Score(VAS)
 - Verbal Rating Score (VRS)
 - None
 - Mild
 - Moderate
 - severe

The end