Acute pain manageme service

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Acute and postoperative pain

- Despite the high prevalence worldwide, acute and postoperative pain is poorly managed

The reasons for inadequate pain management:

- adjuvant drugs, such as simple analgesics and (NSAIDs), are often not enough .
- Patients receive fewer opioids than are ordered by their physicians.
- Fears about drug addiction
- Physicians' knowledge of the nature and properties of the analgesics selected is often inadequate

Approach to acute pain management

- Pharmacologic Measures
- Neural Blockade in the Management of Acute and Postoperative Pain

Pharmacologic Measures

- Nonsteroidal Anti-Inflammatory Drugs
  - Reduce fever, pain, and inflammation without producing chemical dependence.,
  - Decrease inflammation by their inhibitory effect on Prostaglandin synthesis
  - NSAIDS also inhibit platelet function, decrease white blood cell chemotaxis, and impede production of the byproducts of inflammation and the chemical messengers of pain.

Nonsteroidal Anti-Inflammatory Drugs

Examples

- Proprionic acid derivatives: Ibuprofen
- Salicylates: Aspirin
- Anthranilic acid derivatives: Indomethacin
- Oxicams: Piroxicam
- Cyclooxygenase-2 inhibitors: Celecoxib

Side Effects of Nonsteroidal

- **Minor** (e.g., dyspepsia, diarrhea, constipation)
- Life-threatening conditions (e.g., gastrointestinal hemorrhage, hepatic dysfunction, renal insufficiency).

Guidelines for Choosing a Nonsteroidal Anti-Inflammatory Drug

- Assess patient's renal, cardiac, and gastrointestinal status before starting drug treatment.
- Determine best route of administration.
- Select agent whose time between onset of activity and peak effect is appropriate for pain syndrome being treated.

- NSAIDs can cause a decrease in renal function in patients at high risk, such as patients with hypertensive or diabetic nephropathy, or with overuse or misuse
- NSAIDs generally should be taken with food to minimize

gastrointestinal side effects.

A history of dyspepsia and gastrointestinal upset may indicate the need for the concurrent use of gastric cytoprotective agents.

Opioid Analgesics

- Divided into pure agonists (i.E., Morphine, hydromorphone, methadone, levorphanol, meperidine, codeine, propoxyphene, fentanyl, hydrocodone, and oxycodone)
- Agonist-antagonists (Pentazocine, nalbuphine hydrochloride, butorphanol tartrate, buprenorphine hydrochloride)

Toxicity

- meperidine(Pethidine) is commonly used when taken long term or in high doses with PCA. Meperidine is metabolized to normeperidine. This compound has a half-life about four times that of the Pethidine, and its accumulation in plasma may result in signs of central nervous system excitation (e.g., myoclonus, tremor, seizures).

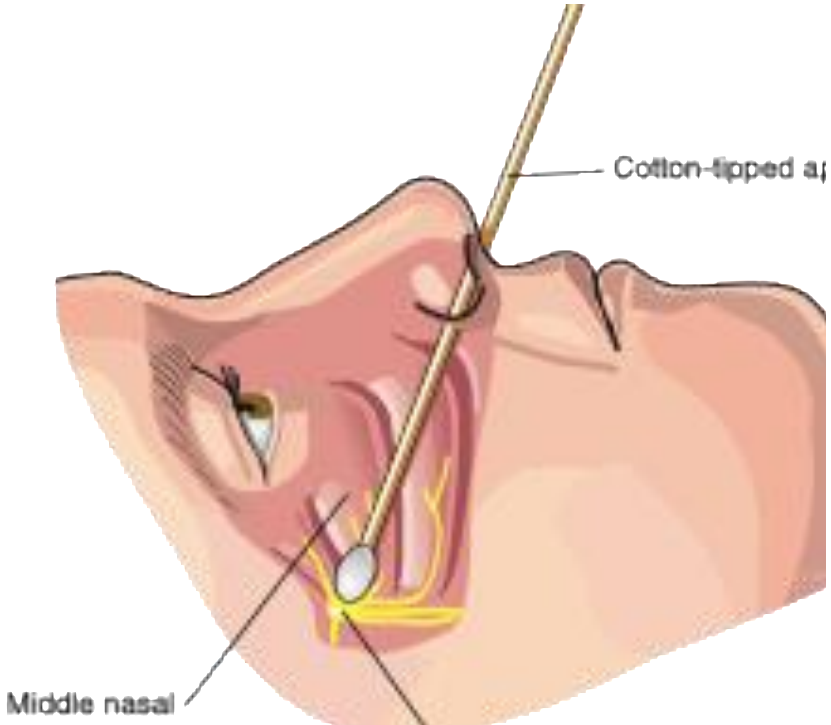
Route of Administration of Opioid

- **Oral administration**
- **INTRAMUSCULAR ADMINISTRATION**
- **INTRAVENOUS BOLUS**
- **CONTINUOUS INFUSION**
- **PATIENT-CONTROLLED ANALGESIA**

Neural Blockade in the Management of Acute and Postoperative Pain

- Sphenopalatine Ganglion block

is useful in the management of acute migraine, acute cluster headache, and a variety of facial neuralgias.



Stellate Ganglion Block

- used to treat acute vascular insufficiency of the upper extremities, frostbite of the face and upper extremities, and acute herpes zoster

Celiac Plexus Block

- indicated to treat pain from acute pancreatitis.

Epidural Nerve Block

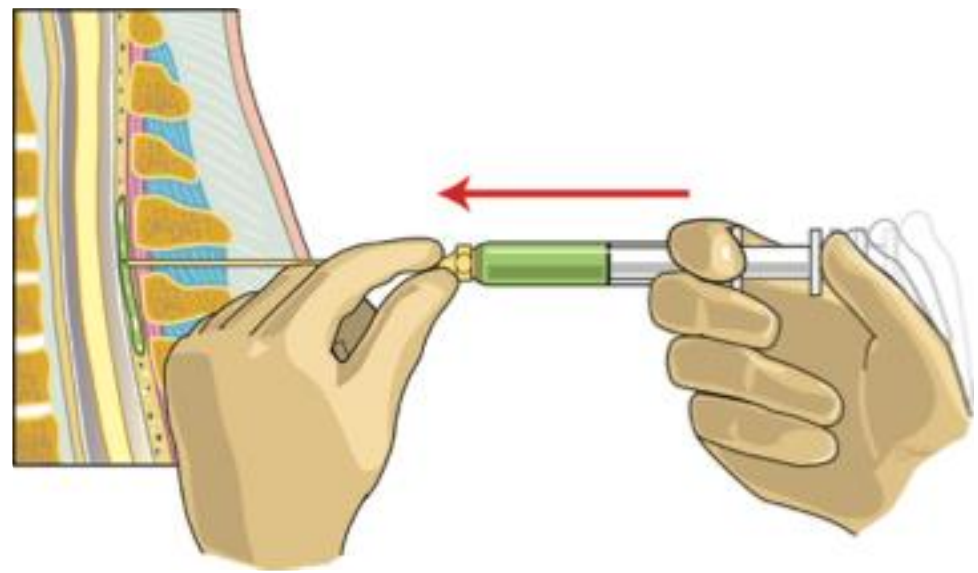
It relieves pain from acute cervical, thoracic, and lumbar radiculopathy

bilateral sympathetically mediated pain (e.g., reflex sympathetic

dystrophy)

pain caused by peripheral vascular insufficiency and ischemic pain from frostbite.

- in the management of acute herpes zoster and postherpetic neuralgia of the extremities or trunk



Trigeminal Nerve Block

- Reliefe of atypical facial pain.
- pain in maxillary neoplasms,
- cluster headache

Intercostal Nerve Block

- Traumatic or pathologic rib fractures
- Chest wall metastasis
- Intercostal neuralgia
- Thoracotomy and is useful for right

Radiation safety in pain management

Radiation Use in Pain Management

- Fluoroscopy for:
  - Epidural steroid injections
  - Nerve blocks
  - Facet joint injections
  - Spinal cord stimulator trials and implants

Radiation Basics

- **Ionizing Radiation**: Can damage tissue and DNA
- **Measured in**:
  - Gray (Gy) – absorbed dose
  - Sievert (Sv) – biological effect
- **Cumulative exposure** matters

Health Risks of Radiation

- **Short-term**: Skin erythema, tissue damage (rare)
- **Long-term**: Increased risk of cancer, cataracts
- **Occupational risk**: Orthopedic surgeons and interventional pain physicians have among the highest cumulative exposure

Who’s at Risk?

- **Patients**
  - Especially those needing repeated procedures
- **Healthcare Providers**
  - Physicians
  - Nurses
  - Radiologic technologists

Principles of Radiation Safety

- **Time**: Minimize exposure time
- **Distance**: Maximize distance from radiation source
- **Shielding**: Use protective barriers

Practical Tips for Providers

- Always wear:
  - Lead aprons (0.5 mm Pb equivalent)
  - Thyroid shields
  - Leaded glasses (optional but recommended)
- Stand on the **image intensifier** side
- Use **pulsed fluoroscopy** and **low-dose settings**
- Use **last image hold**

Monitoring Exposure

- Use **personal dosimeters** (TLD or electronic)
- Wear under the lead apron at chest level
- Check exposure reports regularly
- Know your dose limits:
  - **Annual limit for radiation workers**: 50 mSv (whole body)

Protecting the Patient

- Limit fluoroscopy time
- Use intermittent rather than continuous fluoroscopy
- Avoid unnecessary repeat imaging
- Position beam to minimize dose to radiosensitive organs