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ANALGO-SEDATION IN EMERGENCY MEDICINE PRACTICE

Polskie Towarzystwo Medycyny Ratunkowej

Polish Society for Emergency Medicine


Szpitalny Oddział Ratunkowy
Emergency Department
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Emergency Department

EMERGENCY MEDICINE

Patient related limb- and life- saving care

- Reduction of preventable deaths
- Reduction of patients disability
- Diminishing of human suffer and pain relief in emergencies
- Rationalization of time and costs of treatment

EMERGENCY MEDICINE

Emergency Department realities

- 50 % of Emergency Department visits are pain - related as chief complains, often associated with anxiety
- wide variety of diagnostic and therapeutic procedures in ED are painful

Analgesia and Sedation
in Emergeny Medicine Clinics

- fundamental skill of emergency physicians
- important part of emergency department practice
- improves quality of care
- improves patient satisfaction

Analgesia and Sedation
Terminology

- from *conscious sedation* to *procedural sedation and analgesia (PSA)*
- from *minimal sedation* to *general anesthesia*

(ACEP-1998, ASA-1999, JCAHO-2003)

Analgesia and Sedation level definitons

(Joint Commission on Accreditation of Health Care Organizations 2003)

Minimal sedation (previous „*anxiolysis*”):

A drug-induced state during which individuals respond normally to verbal commands. Although cognitive function and coordination may be impaired, ventilatory and cardiovascular functions are unaffected.

Analgesia and Sedation level definitons

(Joint Commission on Accreditation of Health Care Organizations 2003)

Moderate sedation and analgesia (previous „*conscious sedation*”):

A drug-induced depression of consciousness during which individuals respond purposefully to verbal commands alone or accompanied by light tactile stimulation. No interventions are required to maintain a patent airway, and spontaneous ventilation. Cardiovascular function is usually maintained.

Analgesia and Sedation level definitons

(Joint Commission on Accreditation of Health Care Organizations 2003)

Deep sedation and analgesia:

A drug-induced depression of consciousness during which individuals cannot be easily aroused but respond purposefully after repeated or painful stimulation. The ability to independently maintain ventilatory function may be impaired. Individuals may require assistance in maintaining a patent airway and spontaneous ventilation may be inadequate. Cardiovascular function is usually maintained.

Analgesia and Sedation level definitons

(Joint Commission on Accreditation of Health Care Organizations 2003)

Anesthesia:

A drug-included loss of consciousness during which individuals cannot be aroused, even by painful stimulation. Often required ventilatory assistance. Cardiovascular function may be impared. Consists of general anesthesia and spinal or major regional anesthesia.

It does *not* include local anesthesia.

ANESTHESIA

domain of anesthesiologists

PROCEDURAL SEDATION AND ANALGESIA (PSA)

daily routine of emergency physicians

PSA

IN EMERGENCY DEPARTMENT

most common indications

- relief of pain and enxiety
- facilitation of diagnostic procedures
- facilitation of therapeutic procedures

PSA *IN EMERGENCY DEPARTMENT*

most common indications

Clinical Situation	***Indication***	***Procedural Requirements***	***Suggested Sedation Strategies***
Noninvasive procedures	CT Echocardiography Electroencephalography MRI Ultrasonography	Motion control Anxiolysis	Comforting alone Chloral hydrate PO (in patients < 3 yr of age) Methohexital PR Pentobarbital PO, IM, or IV Midazolam IV Propofol or etomidate IV
Procedure associated with low pain and high anxiety	Dental procedures Flexible fiberoptic laryngoscopy Foreign body removal, simple IV cannulation Laceration repair, simple Lumbar puncture Ocular irrigation Phlebotomy Slit-lamp examination	Sedation Anxiolysis Motion control	Comforting and topical/local anesthesia Midazolam PO/IN/PR/IV Nitrous oxide

PSA *IN EMERGENCY DEPARTMENT*

most common indications

Clinical Situation	***Indication***	***Procedural Requirements***	***Suggested Sedation Strategies***
Procedures associated with high level of pain, high anxiety, or both	Abscess incision and drainage Arthrocentesis Bone marrow aspiration/biopsy Burn débridement Cardiac catheterization Cardioversion Central line placement Endoscopy Foreign body removal, complicated Fracture/dislocation reduction Interventional radiology procedures Laceration repair, complex Paracentesis Parahimosis reduction Sexual assault examination Thoracentesis Thoracostomy tube placement	Sedation Anxiolysis Analgesia Amnesia Motion control	Propofol or etomidate IV ± fentanyl Ketamine IM/IV Midazolam or fentanyl IV

PSA IN EMERGENCY DEPARTMENT

commonly used agents

Drug	Class	Effect	Side Effects	Dose	Peak	Duration
Morphine	Opioid	Analgesia Sedation	↓Respirations ↓BP, HR ↑Histamine	Children: IV: 0,05-0,1 mg/kg Adults: IV: 3-5 mg	IV: 20 m Oral: 60 m IM:30-60 min	1-3 h
Fentanyl	Opioid	Analgesia Sedation	↓Respirations Chest wall rigidity	Children: IV: 1-2µg/kg Adults: IV: 1µg/kg	IV: 0,5-2 m	30-60 m
Alfentanil	Opioid	Analgesia	↓Respirations ↓BP	Adults: IV: 1mg/bolus	IV: 0,5-1 m	10-15 m
Midazolam	Benzodiazepine	Sedation Amnesia	↓Respirations ↓BP ↓Pulse	Children: IV:0,05 mg/kg PO:0,5 mg/kg Adults: IV:0,5-5 mg	IV: 1-5 m PO: 30 m	30-60 m
Diazepam	Benzodiazepine	Sedation Amnesia	↓Respirations ↓BP ↓Pulse	Children: IV:0,05 mg/kg PO:0,2 mg/kg Adults: IV:2,5-5 mg PO: 10 mg	IV: 5-15 m PO:45-60 min	2-6 h

PSA *IN EMERGENCY DEPARTMENT*

commonly used agents

Drug	*Class*	*Effect*	*Side Effects*	*Dose*	*Peak*	*Duration*
Methohexital	Barbiturate	Sedation Amnesia	↓Respirations ↓BP ↑Histamine	Adults: IV:1-3 mg/kg Children: PR:25 mg/kg (max 500 mg)	IV: 1 m PR: 8 m	IV: 3-5 m PR: 80 m
Pentobarbital	Barbiturate	Sedation Amnesia	↓Respirations N&V ↓BP ↑Histamine	Children: IV: 2 mg/kg IM:2-6 mg/kg Adults: IV: 100 mg	IV: 1 m	6-10 m
Propofol	Imidazole derivative	Sedation Amnesia Antiemetric	↓Respirations ↓BP	1-2 mg/kg bolus 50-100 µg/kg/m IV continuous infusion	0,5 m	4-8 m
Etomidate	Isopropyl phenol	Sedation Amnesia	↓Respirations	0,1 mg/kg	1 m	5-8 m

PSA *IN EMERGENCY DEPARTMENT*

commonly used agents

Drug	*Class*	*Effect*	*Side Effects*	*Dose*	*Peak*	*Duration*
Ketamine	Phencyclidine derivative	Dissociation Analgesia Sedation Amnesia	↑BP, HR Laryngospasm Increased secretions	Adults: IV: 1-2 mg/kg Children: IV: 1 mg IM: 2-5 mg/kg	IV: 1 m IM: 5 min	IV:15-20 m i.m.: 30 m
Nitrous oxide	Anesthetic gas	Analgesia Sedation		Self administrered 50:50 mix NO_2-O_2	1-2 m	5 m
Naloxon	Antagonist	Opioid revelsal		Children: IV: 0,1 mg/kg – 2 mg/dose Adults: IV: 0,4-2 mg	2 m	20-40 m
Flumazenil	Antagonist	Benzodiazepine revelsal		Children: IV: 0,02 mg/kg Adults: IV: 0,2 mg/kg	1-2 m	30-60 m

PSA *IN EMERGENCY DEPARTMENT*

most common complications

Complication	Etiology
Delayed awakening	Prolonged drug action Hypoxemia, hypercarbia, hypovolemia
Agitation	Pain, hypoxemia, hypercarbia, full bladder Paradoxical reactions Emergence reactions
Nausea and vomiting	Sedative agents Premature oral fluids
Cardiorespiratory events	
Tachycardia	Pain, hypovolemia, impaired ventilation
Bradycardia	Vagal stimulation, opioids, hypoxia
Hypoxia	Laryngospasm, airway obstruction, oversedation

PSA *IN EMERGENCY DEPARTMENT*

safety precautions

- careful patients assessment and evaluation *(history and physical examination,...)*
- risk stratification *(ASA classification,…)*
- precise, individual medicaments selection
- personal procedural expertise
- continuous patient observation and monitoring
- proper recovery facilities
- detailed discharge procedures and disposition instructions

PSA *IN EMERGENCY DEPARTMENT*

suggested equipment

- High-flow oxygen source
- Suction source with large-bore catheters
- Vascular access equipment
- Monitoring equipment
  - Electrocardiography
  - Pulse oximeter
  - Blood pressure
  - Capnography
- Resuscitation drugs
- Reversal agents (appropriate to drugs being used)
- Adequate staff for monitoring and documentation

PSA *IN EMERGENCY DEPARTMENT*

discharge criteria

- Vital signs stable for at least 30 min
- No evidence of respiratory distress
- Minimal or no nausea, vomiting, or dizziness
- Alert, oriented, and able to retain information
- Able to take fluids and medications by mouth
- Ambulation consistent with preprocedure status
- Receives, comprehends, and retains discharge instructions
- Responsible person present to accompany patient

PSA *IN EMERGENCY DEPARTMENT*

disposition instructions

- Do not drive or operate heavy machinery for 12 hr.
- Eat a light diet for the next 12 hr.
- Take only your prescribed medications as needed, including any pain medication you were discharged with.
- Avoid alcohol.
- Do not make any important decisions or sign important documents for 12 hr. You may be forgetful owing to medications that were administered.
- If you experience any difficulty breathing or persistent nausea and vomiting, return to the emergency department.
- You should have a responsible person with you for the rest of the day and during the night.

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Chair of Emergency Medicine UMW

KARPACZ
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SAVE YOUR TIME!!!

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March 12th-15th, 2014

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