



أسس العناية المركزة \ الكورس الاول

SEDATION IN ICU \ LEC6

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قسم تقنيات التخدير

.....3..... Stage

.....المرحلة الثالثة

....محاضرة رقم 6...

نظري

Lecture No.

Theoretical

.....6..

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ICU SEDATION

The Need for Sedation

- Anxiety
- Pain
- Acute confusional status
- Mechanical ventilation
- Treatment or diagnostic procedures
- Psychological response to stress

Goals of sedation in the ICU

- Patient comfort
- Control of pain
- Anxiolysis and amnesia
- Adverse autonomic and hemodynamic responses
- Facilitate nursing management
- Facilitate mechanical ventilation
- Avoid self extubation
- Reduce oxygen consumption

Characteristics of an ideal sedation agents for the ICU

- Lack of respiratory depression
- Rapid onset, titratable with a short elimination half-time
- Sedation with ease of orientation and arousability
- Anxiolytic
- Hemodynamic stability
- No accumulation in renal/ hepatic dysfunction

Sedation

Causes for agitation



Sedatives



Causes of Agitation not to be Overlooked

- Hypoxia
- Hypercarbia
- Hypoglycemia
- Endotracheal tube malposition

COMMONLY USED SEDATIVES IN ICU

- Opioids
- Benzodiazepines
- Intravenous anesthetic agents
- Other sedatives (eg: Haloperidol)

OPIOIDS



Functions: analgesia, narcosis, and anxiolysis

MOA : Binds with stereospecific receptors at many sites within the CNS, increases pain threshold, alters pain reception, inhibits ascending pain pathways.

Eg : Morphine, Fentanyl, Alfentanil and Remifentanyl .

	Onset	Peaks	Duration
Morphine	2 min	20 min	2 – 7 hrs
Fentanyl	30 sec	5 – 15 min	30 – 60 min

MORPHINE STANDARD DOSE

Intravenous bolus injection 2.5-5 mg every 15 minutes

Continuous Intravenous Infusion 1-12 mg/ hr

FENTANYL STANDARD DOSE

Analgesia: 1-2 mcg/kg IV/IM q30-60min PRN or 1-3 mcg/kg/hr by continuous IV infusion

Sedation: 0.5-1 mcg/kg IV/IM q30-60min PRN

Side-effects: respiratory depression, bradycardia, and hypotension (secondary to histamine release), nausea and vomiting, constipation, CNS depression.

BENZODIAZEPINES



Functions: sedation and hypnosis.

MOA: modulating the effects of GABA, the main inhibitory neurotransmitter within the central nervous system.

Eg: Midazolam, Diazepam, Lorazepam

	Onset	Peaks	Duration
Midazolam	2 – 3 min	5 – 10 min	30 – 120 min
Diazepam	2 – 5 min	5- 30 min	> 20 hrs
Lorazepam	5 – 20 min	30 min	10 – 20 hrs

MIDAZOLAM S TANDARD DOSES

IV bolus injection: 1-2.5 mg every two min, max 5 mg.

Continuous iv infusion: 1- 10 mg/hr

Sideeffects: Respiratory depression, hypotension, nausea, vomiting.

INTRAVENOUS ANESTHETIC AGENTS - PROPOFOL

Functions: Sedation and anesthetics effect

MOA : Propofol is a sterically hindered alkyl phenolic compound with iv general anaesthetic properties.

IV bolus: 1.5-2.5 mg/kg (less in the elderly) at a rate of 20-40 mg every 10 seconds

Continuous iv infusion: 0.3- 4mg/ kg/ hr

	Onset	Peaks	Duration
Propofol	30 – 60 sec	2 – 5 min	10 min

Adverse Effects:

Propofol Infusion Syndrome:

Severe metabolic acidosis, rhabdomyolysis, hyperkalaemia, hypertriglyceridaemia, renal failure, hepatomegaly and cardiovascular collapse (usually occurs at doses of > 5mg/kg/hr)

Monitor blood-lipid concentration if at risk of fat overload or if sedation used for longer than 3 days. If lipid levels high – change to alternative sedation and consider starting lipid lowering agents.

Neuromuscular blocking agents

A. Nondepolarizing blockers

1. Long acting: pancuronium, doxacurium, pipecuronium
2. Intermediate acting: atracurium, vecuronium, cisatracurium
3. Short acting: mivacurium

B. Depolarizing blockers: succinylcholine

ATRACURIUM



Uses: to facilitate intubation and ventilation

MOA: Blocks neural transmission at the myoneural junction by binding with cholinergic receptor sites.

	Onset	Peaks	Duration
Atracurium	2 – 3 min	30 min	60 – 70 min

Standard dosage:

Initial iv bolus: 0.4 – 0.5 mg/kg

Continuous iv infusion: 11 – 13 mcg/kg/min

Succinylcholine is a blocking agent that produces depolarization at the endplate and binds to extrajunctional receptors. In spite of many side effects, such as hyperkalemia, its rapid offset makes it the drug of choice for rapid sequence induction

RICHMONDS SEDATION SCALE

Score	Descriptor	Characteristics
+4	Combative	Combative; violent, immediate danger to staff
+3	Very agitated	Pulls or removes tube(s) or catheter(s); aggressive
+2	Agitated	Frequent nonpurposeful movement, fights ventilator
+1	Restless	Anxious, apprehensive but movements not aggressive or vigorous
0	Alert and calm	
-1	Drowsy	Not fully alert, but has sustained awakening to voice (eye opening and contact >10 seconds)
-2	Light sedation	Briefly awakens to voice (eye opening and contact <10 seconds)
-3		
-4	Moderate sedation	Movement or eye opening to voice (but no eye contact)
	Deep sedation	No response to voice, but movement or eye opening to physical stimulation
-5	Unarousable	No response to voice or physical stimulation



What Sedation scales do

- Standardize treatment endpoints
- Allow review of efficacy of sedation
- Facilitate sedation studies
- Help to avoid over sedation

Any questions?

*Thank
You*

QUIZ

