

Postoperativni bol

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Akutni bol/ Banja Luka, 06.07.2019.

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Uvod

- Postoperativni bol ---- Akutni bol

AKUTNI BOL	HRONIČNI BOL
neposredan	traje duže od 3-6 mjeseci
upozorenje	nema svrhu
lakši za tretman	teže indentifikovati uzrok
ima svoj završetak	teži za tretman

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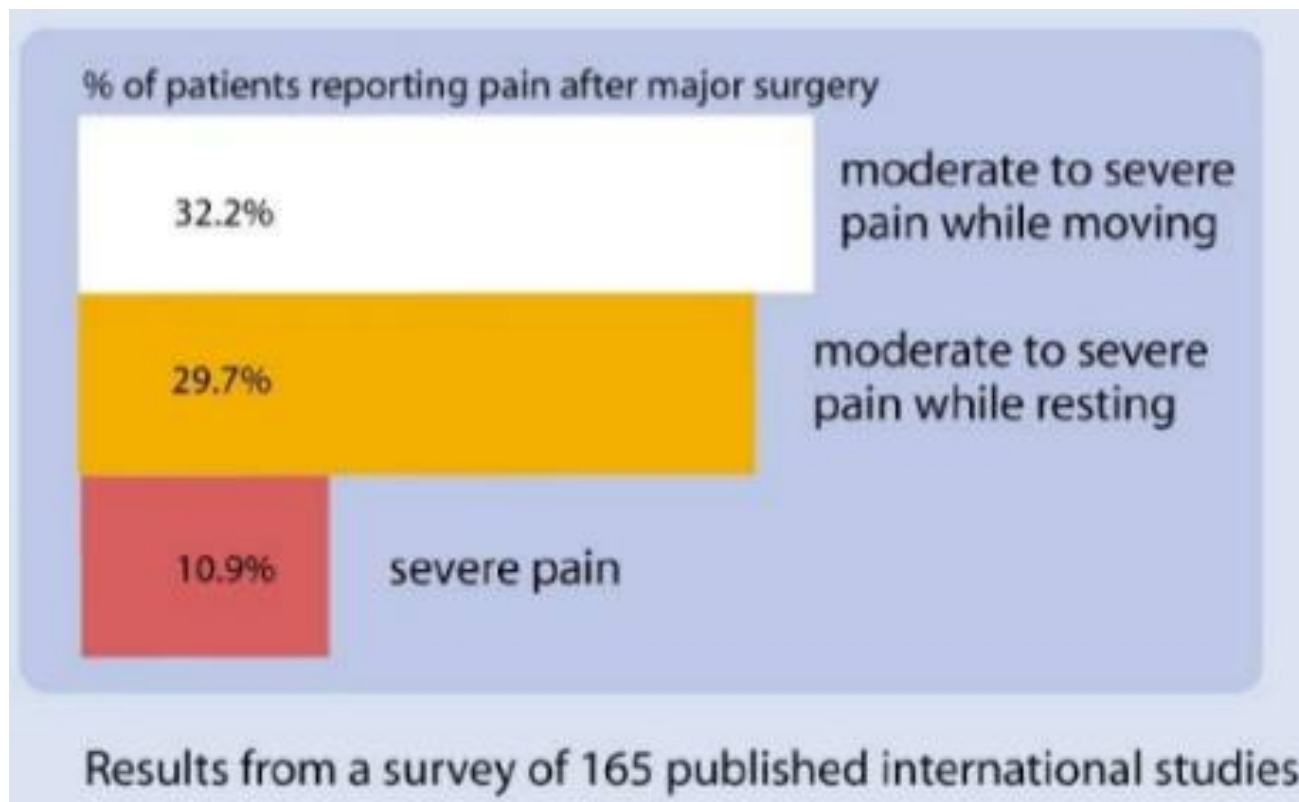
Akutni bol

- To je početna faza snažne, trajne nocicepcijske kaskade koja u vrlo kratkom vremenskom razdoblju zbog razvoja centralne i periferne senzitivacije može prerasti u hronični bol
- Oko 50% bolesnika iskusi umjereni do jaki bol nakon hirurškog zahvata
- Razlozi učestalog slabog liječenja boli:
 - nedostatak znanja
 - strah od respiratorne depresije
 - strah od razvijanja ovisnosti

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Postoperativni bol



Dolin Sj et al. Br J Anaesth 2002, 89:409-423.

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Na intenzitet, kvalitet i trajanje postoperativnog bola utiču

- fizičko i psihičko stanje pacijenta, uključujući i osobni pristup pacijenta prema bolu
- preoperativna psihološka i farmakološka priprema
- vrsta i trajanje hirurškog zahvata
- vrsta i opseg incizije i hirurške traume
- vrsta anestezije
- liječenje bola prije i poslije hirurškog zahvata
- učestalost hirurških komplikacija
- kvalitet postoperativne zdravstvene njege

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Zašto tretirati akutni bol?

- Iz etičkih i humanih razloga
- Smanjenje težine pridruženih štetnih fizioloških i psiholoških faktora
- Smanjenje rizika od razvoja hroničnog bola

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Zašto tretirati akutni bol?

1. *Etički i humanitarni razlozi*

- *Uklanjanje patnje uzrokovano bolom, glavna je i nesporna korist liječenja bola.*
- *Pružanje učinkovite kontrole bola je profesionalna odgovornost.*
- *Neadekvatno liječenje boli je loša medicinska praksa.*

Sedare dolorem opus divinum est!

Ublažiti bol, božansko je djelo!

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Zašto tretirati akutni bol?

2. Za smanjenje ozbiljnosti štetnih fizioloških učinaka

- **Respiratorni sistem:** operativni zahvati na gornjem abdomenu ili grudnom košu dovode do ograničenih pokreta dijafragme zbog bola pri disanju što rezultira smanjenjem kašlja zbog bola, smanjenjem disajnog volumena, retencijom sekreta, atelektazama, infekcijom i hipoksijom.
- **Kardiovaskularni sistem:** tahikardija, hipertenzija, povećan srčani rad i povećana potrošnja kiseonika mogu rezultirati infarktom miokarda u rizičnih pacijenata.
- **Muskuloskeletni sistem:** smanjena pokretljivost i povećan mišićni spazam uslijed bola mogu dovesti do duboke venske tromboze.
- **Gastrointestinalni sistem:** oslabljena peristaltika, gastrična staza i moguća abdominalna distenzija
- **Urogenitalni sistem:** hipomotilitet mokraćnog mjehura, retencija urina
- **Endokrini sistem:** porast nivoa stres hormona kao što su kortizol i aldosteron može odgoditi zarastanje rane i uzrokovati retenciju tečnosti
- **Centralni nervni sistem:** patnja, anksioznost, strah, nesanica
- **Hronični posthirurški bolni sindrom:** hronični perzistirajući bol na mjestu operativne rane i nakon zacjeljenja.

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Zašto tretirati akutni bol?

Neliječena akutna bol tokom perioperativnog razdoblja najsnažniji je okidač stresnog odgovora koji pokreće vitalno ugrožavajuće kaskade metaboličkog i upalnog odgovora

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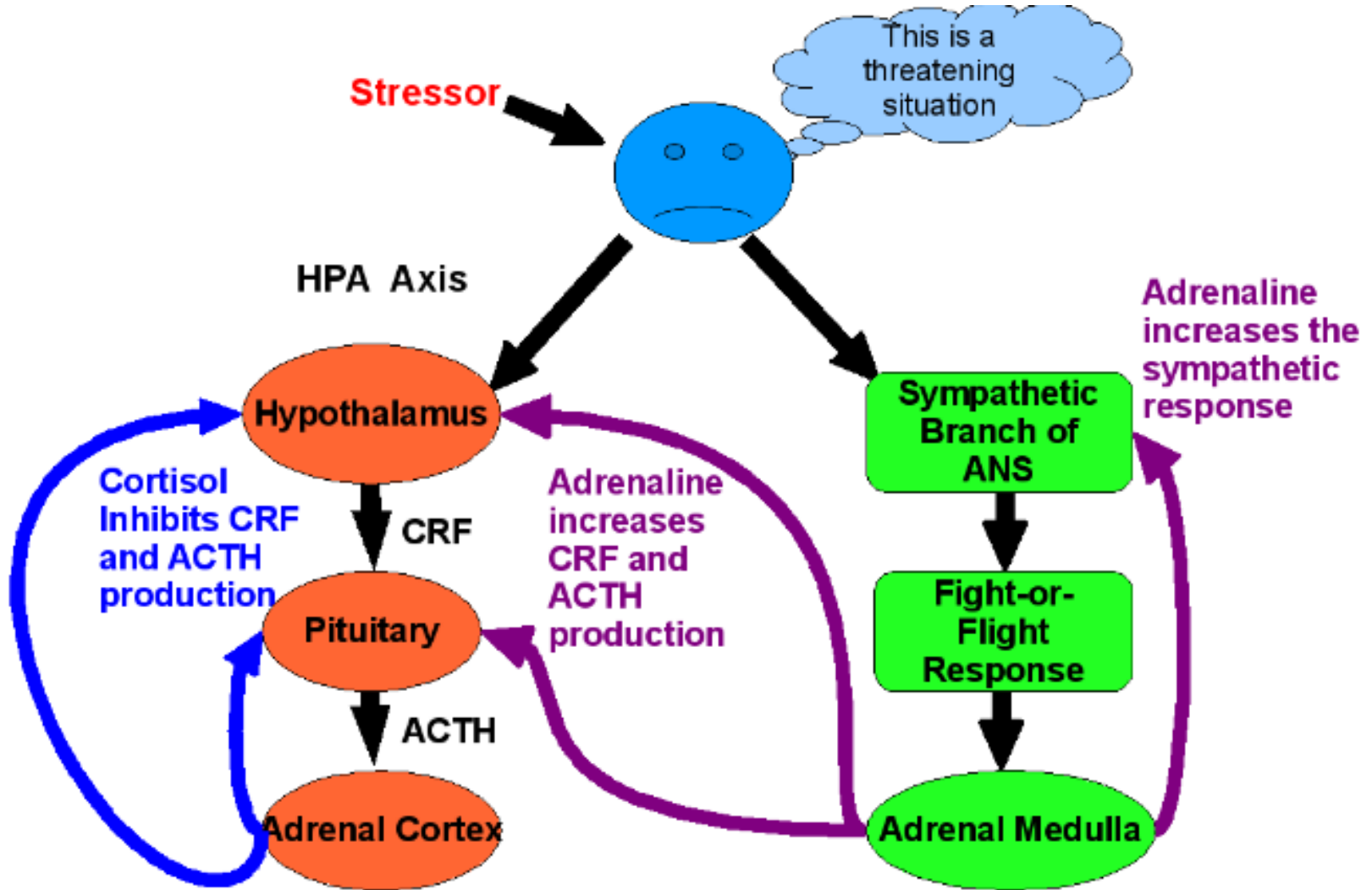
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Zašto tretirati akutni bol?

- Brojne su kliničke studije pokazale da produženi i pojačan simpatički, neurohumoralni te imunološki odgovor neadekvatno tretiranog akutnog bola u dnevnoj kliničkoj praksi, dovodi do:
 - odloženog usporenog zarastanja operativne rane
 - insuficijencije hirurških anastomoza
 - povećane učestalosti plućnih komplikacija i tromboemboličkih incidenata
 - povećane učestalosti razvoja kardiovaskularnih komplikacija posebno koronarnih incidenata

Kehlet H. Effects of postoperative pain relief on outcome. 2005; An updated review: Refresher course syllabus. IASP Press. Seattle 277-281

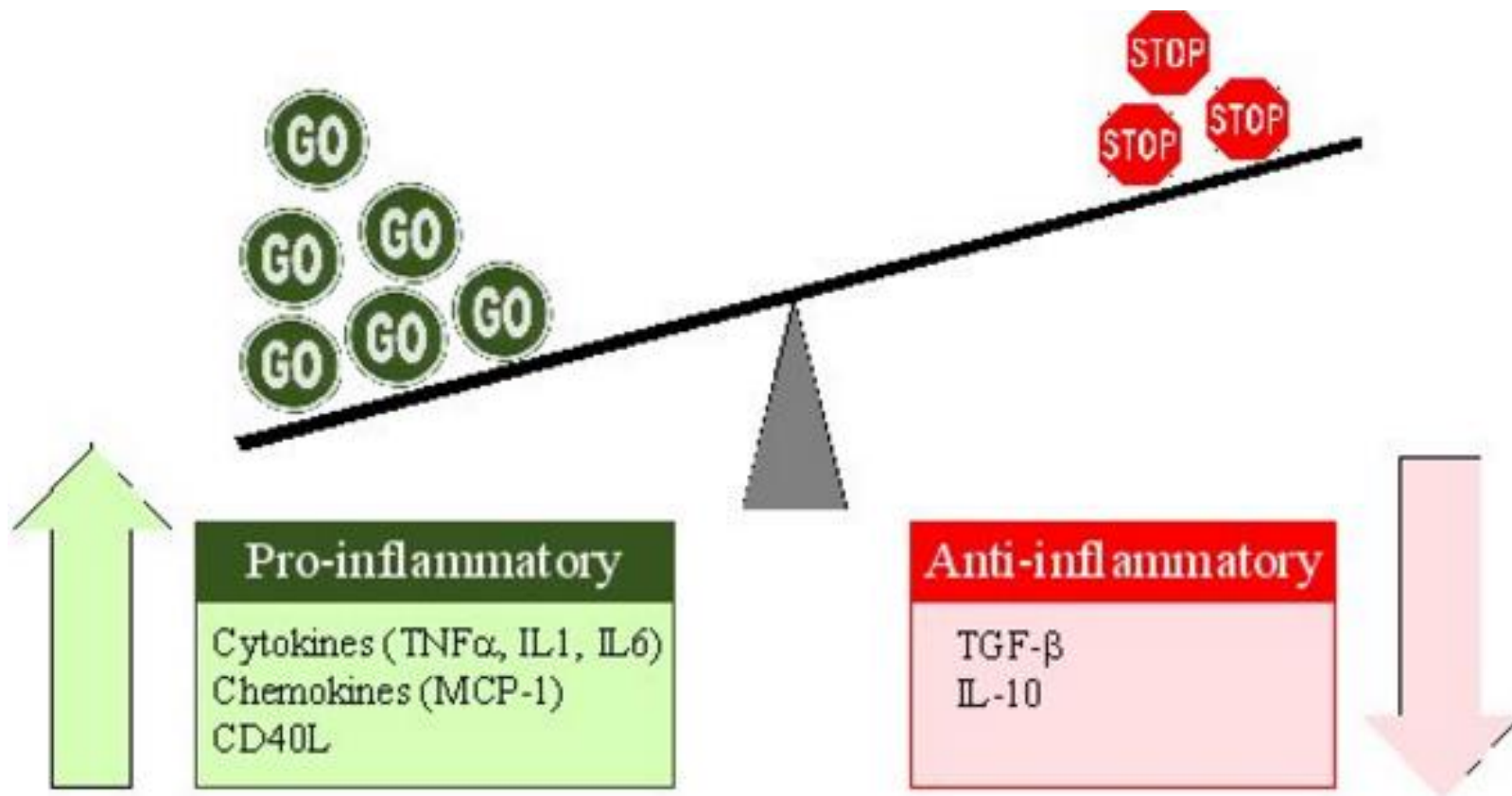
SURGICAL STRESS RESPONSE



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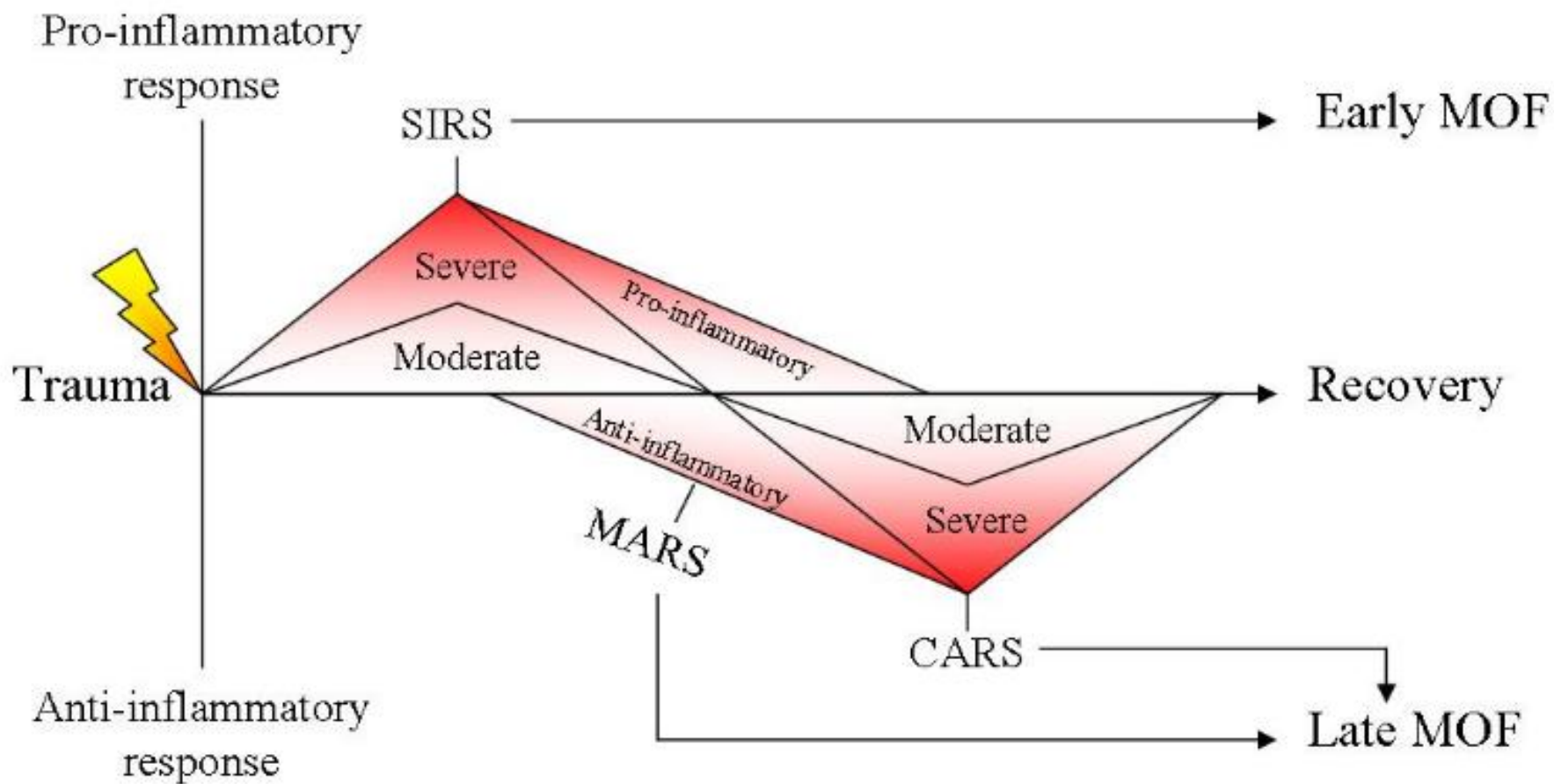
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IMUNOINFLAMATORNE PROMJENE NAKON OP. ZAHVATA



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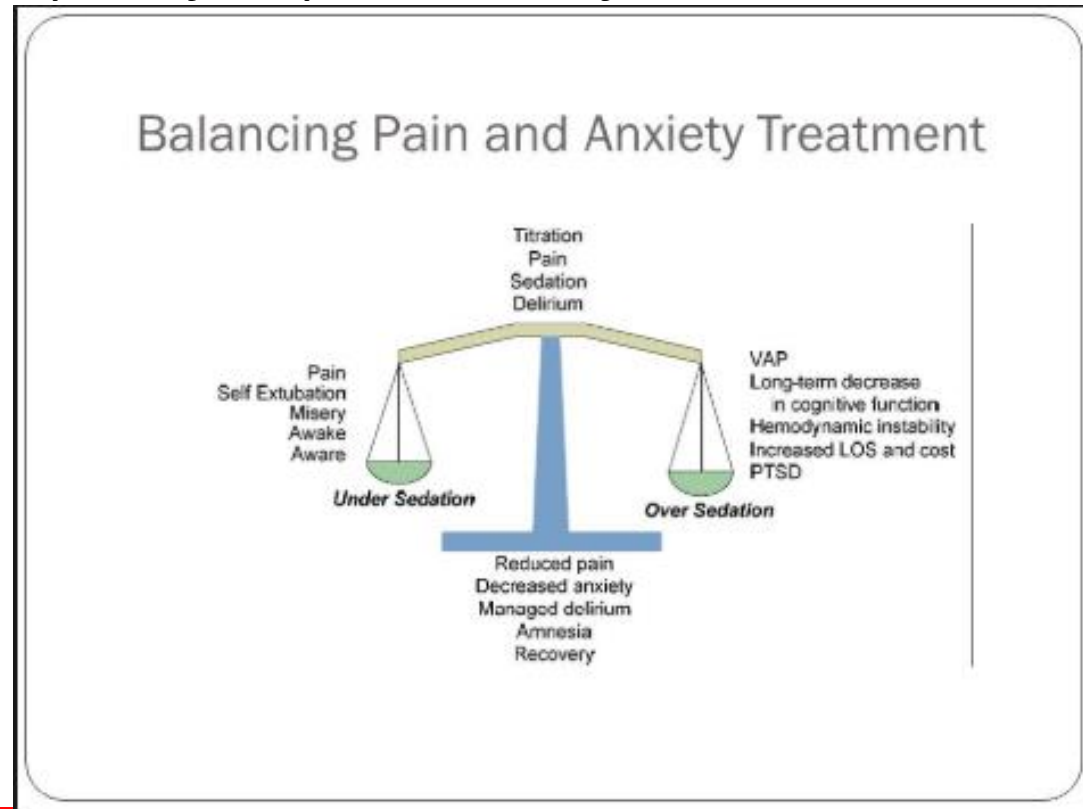
Zašto tretirati akutni bol?

3. Za smanjenje ozbiljnosti nepovoljnih psiholoških faktora

Neadekvatno tretiran bol može uzrokovati ili povećati:

- Anksioznost ili strah
- Nesanicu koja vodi u umor i iscrpljenost

Kad su ublaženi ovi psihološki faktori, može se smanjiti osjećaj bola.



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Zašto tretirati akutni bol?

4. Za smanjenje rizika od HPBS

Iako se u većine pacijenata bol s vremenom smanjuje, neki pacijenti (~ 1 od 10 do 20) razviju hronični bol nakon operacije ili ozljede.

Liječenje je potrebno u oko 50% tih bolesnika.

Rizik od razvoja hroničnog bola je veći kod bolesnika koji su imali jaku bol nakon operacije.

Hronični bol je teško liječiti.

Ne izbjegavati jake opioide nakon operacije, problem razvoja ovisnosti kod ovih bolesnika je zanemariv.

Zašto tretirati akutni bol?

Incidenca HPBS nakon određenih zahvata

Surgery	Pain syndrome	Incidence
• Limb amputation	Phantom limb pain	30-81%
• Thoracotomy	Post-thoracotomy pain (PTPS)	> 50%
• Breast surgery	Post-mastectomy pain (PMPS)	scar 11-57% phantom 13-24% arm, shoulder 12-51%
• Gall bladder	Post-cholecystectomy (PCS)	3-56%
• Inguinal hernia	Groin pain	overall 11.5% (0-37%)

Perkin FM, Kehlet H. Anesthesiology 2000. 93:1123-1133.

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Kako procjeniti akutni bol?

- Pitati pacijenta: *učiniti bol vidljivim*
- *Bol je uvijek subjektivan*

Osim ako se ne zatraži da iskažu intenzitet bola, pacijenti su skloni tolerisati bol tiho

Obzirom da se bol procjenjuje po izjavi pacijenta u riziku su:

- pacijent koji govori drugi jezik
- starije osobe
- pacijenti s kognitivnim disfunkcijama
- djeca

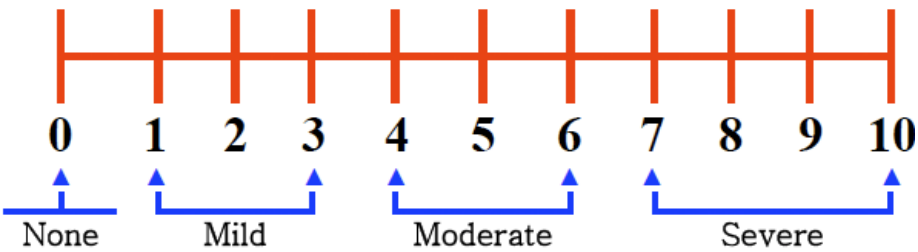


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Skale za procjenu bola

- Brojčana skala



- Verbalna skala bola

1. Nema bola 0
2. Blagi +
3. Umjereni ++
4. Jak +++

Kako procjeniti akutni bol?

- Bol procjenjivati u mirovanju i pri aktivnosti
- Zamoliti pacijenta da izvrši aktivnost koja je povezana s operacijom
 - Koliko bola imate kada se okrećete u krevetu / sjednete ili ustanete iz kreveta (ortopedski pacijenti)
 - Koliko bola imate kada duboko udahnete ili kašljete (pacijenti opšte hirurgije).
 - Koliko bola imate prilikom gutanja (pacijenti nakon tonzilektomije)

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Kako tretirati postoperativni bol?

- Tretman hirurškog bola počinje preoperativno
- Saradnja anesteziološkog i hirurškog tima
- Identificirati pacijente s rizikom za komplikacije
- Preemptivna i preventivna analgezija
 - primjena analgetskog tretmana prije hirurške traume ili ozljede tkiva
 - može se dati i tokom bilo kojeg dijela operativnog zahvata

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Kako tretirati postoperativni bol?

- Preoperativno
 - Razgovarati s pacijentom i informisati ga o načinima analgezije
 - Informisati pacijenta o načinima procjene intenziteta boli
 - Premedikacija paracetamolom
- Intraoperativno
 - Infiltracija rane lokalnim anestetikom (hirurg)
 - Primjena analgetika (IV ili rektalno)

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Kako tretirati postoperativni bol?

- Ublažavanje intraoperativnog hirurškog stresa
 - adekvatnom anesteziološkom tehnikom
 - smanjenjem stepena hirurške traume
 - opioidi, intravenski (IV) lidokain, β -blokatori, α_2 agonisti i regionalna anestezija

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Kako tretirati postoperativni bol?

[Rev Bras Anesthesiol](#). 2010 May-Jun;60(3):325-33. doi: 10.1016/S0034-7094(10)70041-6.

Intraoperative intravenous lidocaine.

[de Oliveira CM](#)¹, [Issy AM](#), [Sakata RK](#).

Author information

Abstract

BACKGROUND AND OBJECTIVES: Most patients undergoing surgery experience moderate to severe pain, indicating the need to improve the anesthetic technique. Intravenous lidocaine has been widely used in the treatment of chronic pain. The objective of this report was to review the use of intravenous lidocaine for postoperative analgesia.

CONTENTS: The pharmacologic aspects and mechanism of action of lidocaine as well as clinical studies in which the authors used intraoperative lidocaine were reviewed.

CONCLUSIONS: Intravenous lidocaine can promote analgesia in surgical procedures, representing another alternative for the treatment of acute pain. Controlled studies with different surgical interventions could bring more information on this modality of analgesia.

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[Can J Anaesth](#). 2011 Oct;58(10):911-23. doi: 10.1007/s12630-011-9560-0. Epub 2011 Jul 20.

A systematic review of intravenous ketamine for postoperative analgesia.

Laskowski K¹, Stirling A, McKay WP, Lim HJ.

⊕ Author information

Abstract

PURPOSE: Perioperative intravenous ketamine may be a useful addition in pain management regimens. Previous systematic reviews have included all methods of ketamine administration, and heterogeneity between studies has been substantial. This study addresses this issue by narrowing the inclusion criteria, using a random effects model, and performing subgroup analysis to determine the specific types of patients, surgery, and clinical indications which may benefit from perioperative ketamine administration.

SOURCE: We included published studies from 1966 to 2010 which were randomized, double-blinded, and placebo-controlled using intravenous ketamine (bolus or infusion) to decrease postoperative pain. Studies using any form of regional anesthesia were excluded. No limitation was placed on the ketamine dose, patient age, or language of publication.

PRINCIPAL FINDINGS: Ninety-one comparisons in seventy studies involving 4,701 patients met the inclusion criteria (2,652 in ketamine groups and 2,049 in placebo groups). Forty-seven of these studies were appropriate for evaluation in the core meta-analysis, and the remaining 23 studies were used to corroborate the results. A reduction in total opioid consumption and an increase in the time to first analgesic were observed across all studies ($P < 0.001$). The greatest efficacy was found for thoracic, upper abdominal, and major orthopedic surgical subgroups. Despite using less opioid, 25 out of 32 treatment groups (78%) experienced less pain than the placebo groups at some point postoperatively when ketamine was efficacious. This finding implies an improved quality of pain control in addition to decreased opioid consumption. Hallucinations and nightmares were more common with ketamine but sedation was not. When ketamine was efficacious for pain, postoperative nausea and vomiting was less frequent in the ketamine group. The dose-dependent role of ketamine analgesia could not be determined.

CONCLUSION: Intravenous ketamine is an effective adjunct for postoperative analgesia. Particular benefit was observed in painful procedures, including upper abdominal, thoracic, and major orthopedic surgeries. The analgesic effect of ketamine was independent of the type of intraoperative opioid administered, timing of ketamine administration, and ketamine dose.

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Kako tretirati postoperativni bol?

- Postoperativno – soba za postanestezijski nadzor i odjel
 - Davati analgetike u redovnim intervalima – ne samo prema potrebi
 - Kombinovati opioide i neopioide
 - Dozirati analgetik prema potrebama pacijenta
 - Trajanje tretmana ovisi od vrste operativnog zahvata kao i pacijentovih individualnih potreba

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Preporuke za analgeziju nakon određenih hirurških zahvata u odraslih

Hirurški zahvati s očekivanim blagim postoperativnim bolom

- artroskopije, endoskopski urološki zahvati, manji ginekološki zahvati, površinske operacije kože, manji ORL postupci
- neopijatni analgetici, npr. **metamizol** 1-2,5 g u 100 mL fiziološke otopine IV tri puta dnevno (do 5 mg dnevno) ili paracetamol 4 x 1 g IV (do 4 g dnevno)
- bol praćen upalom ili nakon vađenja zuba - NSAID su učinkovitiji.

Preporuke za analgeziju nakon određenih hirurških zahvata u odraslih

- Ako pacijent ne može uzimati lijek peroralno može se dati kombinacija **diklofenak 30 mg + orphenadrine 12 mg** svakih 12 sati, sam diklofenak - do 75 mg u infuziji svakih 12 sati, ili parekoksib 40 mg IV (IM) svakih 12h naročito ako postoji rizik od krvarenja (ORL procedure, endoskopske urološke procedure).
- **Peroralno davanje treba započeti što je prije moguće**, npr.
 - ❑ **paracetamol 4 x 1 g + diklofenak 2 x 75 mg, naproksen** do 3 x 550 g ili **ibuprofen 3 x 800 mg**
 - ❑ **paracetamol 4 x 1 g + tramadol 50-100 mg**
 - ❑ **ako je bol intenzivnija: paracetamol + diklofenak (ibuprofen, naproksen) + tramadol**
 - ❑ Ako je analgezija nedovoljna, mogu se primijeniti **jaki opijatni analgetici**, npr. piritramid 15 mg SC, morfij 5-10 mg SC, ili petidin 50-100 mg SC.

Preporuke za analgeziju nakon određenih hirurških zahvata u odraslih

Hirurški zahvati s očekivanim umjerenim postoperativnim bolom

- laparoskopski hirurški zahvati, videotorakoskopije, operacije kile, histerektomije (vaginalne), mastektomije, tiroidektomije, hirurški zahvati spinalnog diska

Preporuke za analgeziju nakon određenih hirurških zahvata u odraslih

- **redovna primjena** neopijatnih analgetika i slabih opijatnih analgetika 1-2 dana nakon operacije
- **paracetamol** 1 g svakih 6 sati (IV, rektalna ili oralna primjena),
- **metamizol** 1 g IV svakih 6 sati, ili 2,5 g svakih 12 sati (maksimalna doza na dan: 5 g), **ili u kombinaciji s tramadolom** do maksimalne dnevne doze od 400 mg (kontinuirana primjena otopine za infuziju koja traje 24 sata ili 50-100 mg bolusa svakih 6 sati)
- **dodavanje NSAR**, diklofenak kao dodatak tramadolu u dozi od 100-150 mg tokom 24 sata ili kao zasebna kratkotrajna IV infuzija od 50-75 mg.
- Ako je analgezija nedovoljna, tramadol se može zamijeniti **jakim opijatnim** analgetikom (morfij 10 mg SC svakih 4-6 sati, piritramid 7,5-15 mg SC ili IV svakih 8 sati).

Preporuke za analgeziju nakon određenih hirurških zahvata u odraslih

Hirurški zahvati s očekivanim jakim postoperativnim bolom

- operativni zahvati na kosti s velikim oštećenjem periosta (totalna proteza koljena, hirurški tretman skolioze)
- Torakotomije, hirurški zahvati na gornjem dijelu trbuha (resekcije želuca, gušterače, jetre) i u postupcima koji se izvode primjenom lumbotomije (nefrektomija)
- ***torakalna epiduralna analgezija***
- mogu se dodati neopijatni analgetici (paracetamol ili metamizol IV, oralno do ukupne doze od 4 g / 24 h) ili koksibi (parekoksib 2 x 40 mg IV, celekoksib 2x 100 mg oralno)

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Preporuke za analgeziju nakon određenih hirurških zahvata u odraslih

Ako epiduralni kateter nije plasiran

- jaki opijatni analgetik u ranom postoperativnom periodu bilo kao IV (titracijski) bolus (morfij 5-10 mg IV, piritramid 7,5-15 mg IV), ili kao kontinuirana IV infuzija (sufentanil 15 mcg / h, piritramid počevši od 1 mg / h)
- PCA

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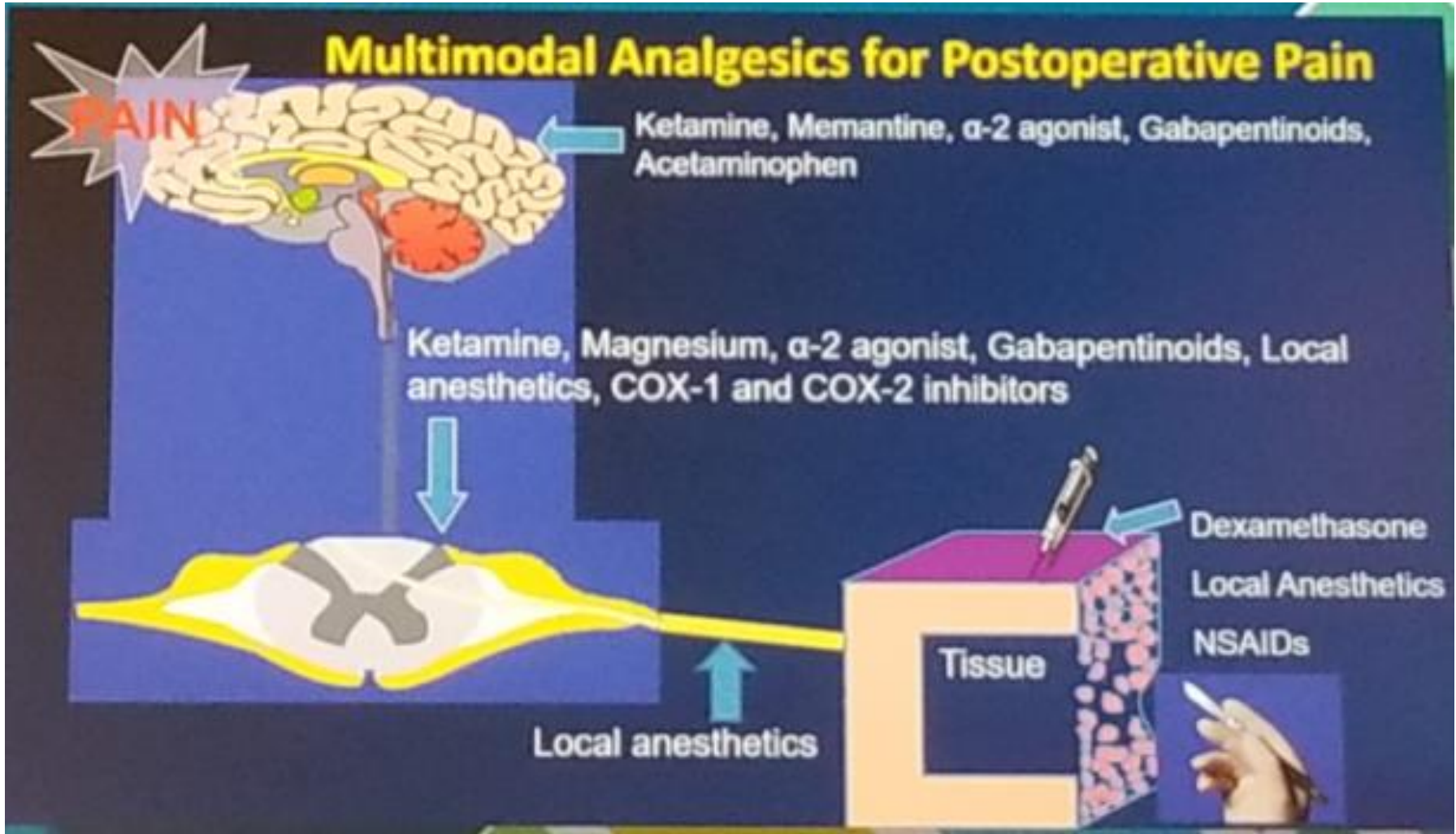
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ZAKLJUČAK

- Postoperativni bol je individualno multifaktorijalno iskustvo
- Optimalna kontrola postoperativnog bola rezultat je pravilnog liječenja u preoperativnom, intraoperativnom i postoperativnom razdoblju
- Multimodalni pristup ublažavanja boli

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TEAM



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