SAOA 2023, Spring Meeting
April 1st 2023, Lucerne

Use of neuraxial dexmedetomidine in OB anesthesia

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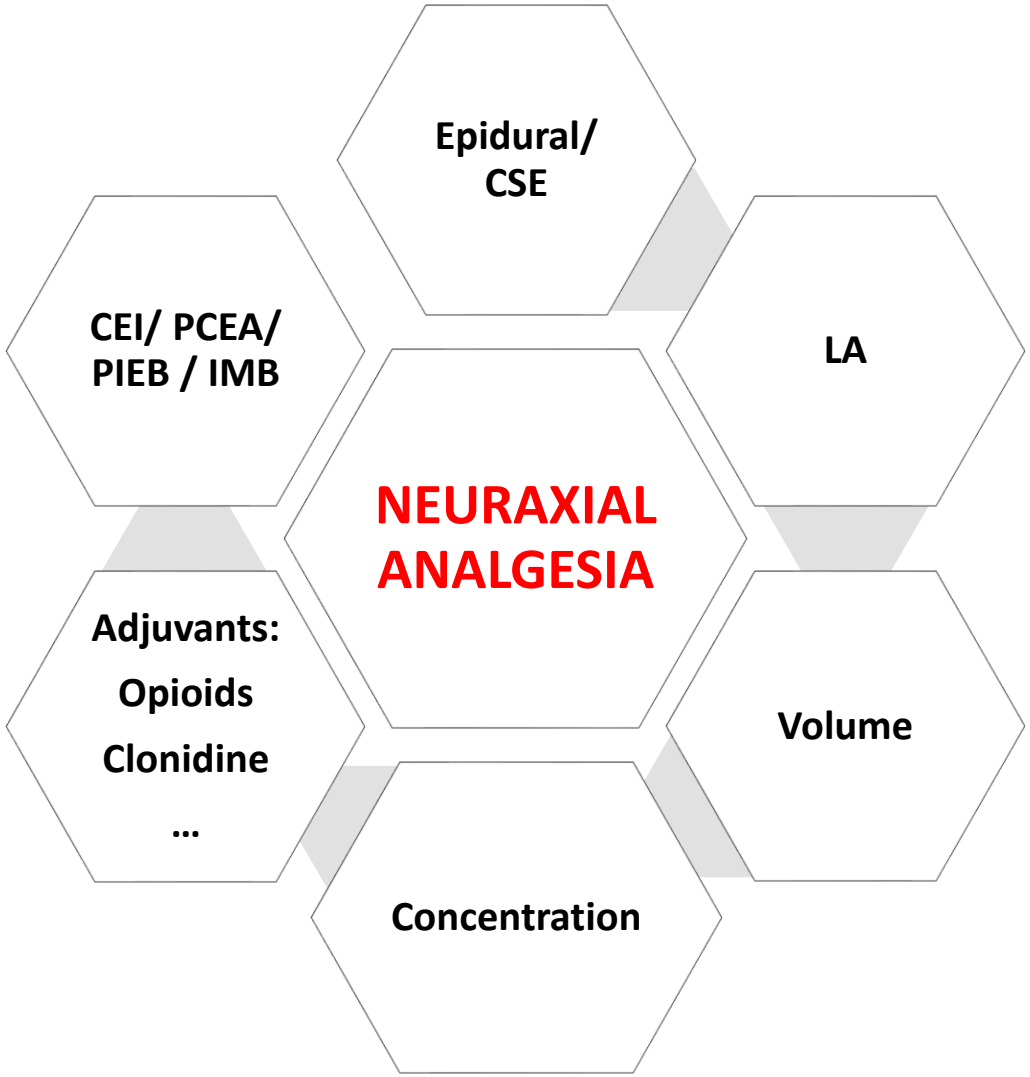


Optimal analgesia
Quality of block
Minimal top ups
↓ LA concentration

Pruritus
Nausea
Vomiting
Respiratory depression

Motor block
Maternal hypotension
Urinary retention
↑ second stage of labor
↑ instrumental delivery

OPIOID FREE ANALGESIA

Adjuvants: α 2 agonists

	CLONIDINE	DEXMEDETOMIDINE	
SELECTIVITY α 2/1	220/1	1600/1	8 X
T ½ β	8h	2h	
Route administration	Oral, IV, patch, epidural	IV	
Primary indication	Antihypertensive	Sedative	
Other indication	Analgesic	Analgesic	
Maternal/fetal index	0.85	0.68 - 0.77	Liposolubility ++

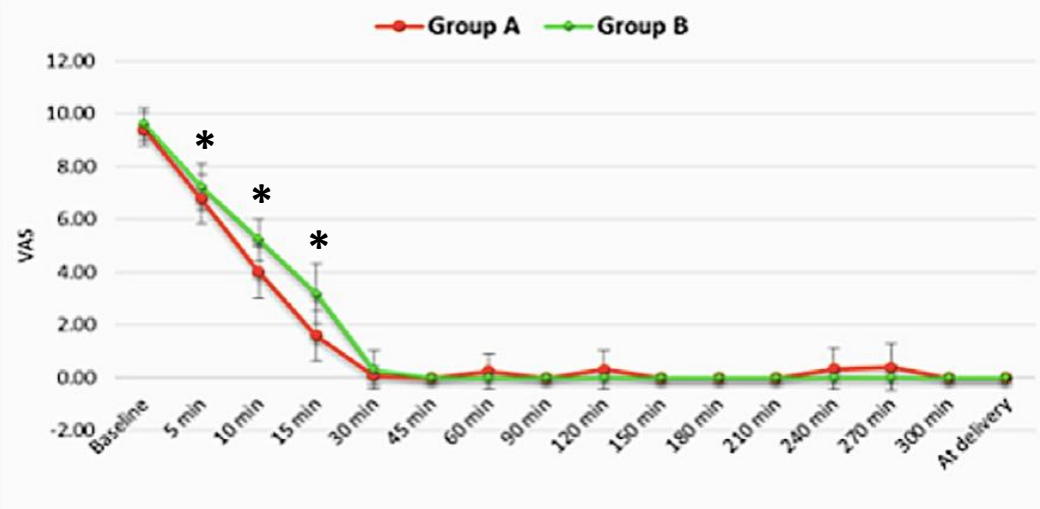
- **Thus Dex is an interesting drug to study in labor pain**

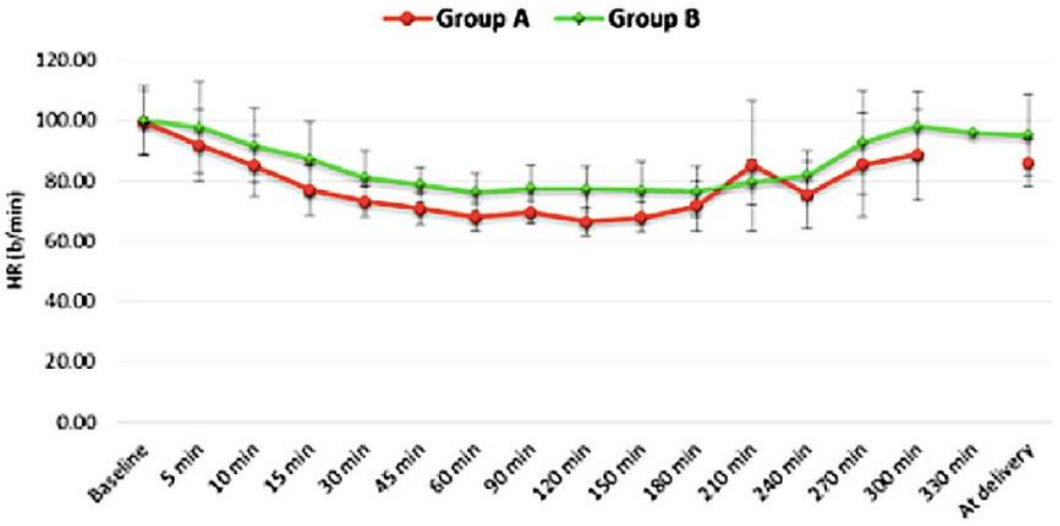
C. Wang et al. J Int Med Res. 2017 Jun; 45(3): 964–972

2021 Kabi et al. Cureus 13(12): e20237.

A Comparison Between Dexmedetomidine and Clonidine as Adjuvants to Levobupivacaine in Labour Analgesia

10 mL bolus: 0.125% levobupi + 0.5 ug/kg dex (A) vs 1 µg/kg clo (B) , PCA 10 ml/h, rescue 5 ml / 10 min





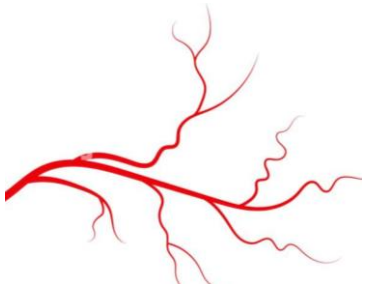
OUTCOMES	DEX	CLO
ONSET min	11 ± 1.3	15 ± 2
MAXIMUM min	14.6 ± 1.2	18 ± 2

- Faster onset with DEX
- Fall in HR significantly greater
- NO difference in obstetric, neonatal outcomes
- NO difference in adverse reactions

DEXMEDETOMIDINE

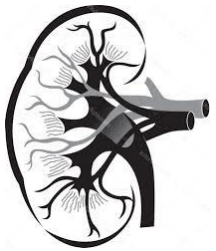
α 2a
vagomimetic action

α 2b
Decrease tachycardia
Blocks cardioaccelerator nerve

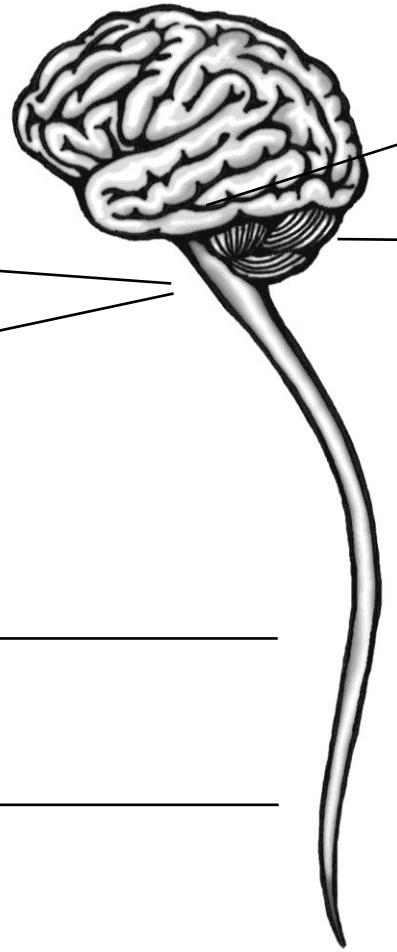


α 2b vasoconstriction
antishivering

α 2a vasodilation



α 2b diuresis

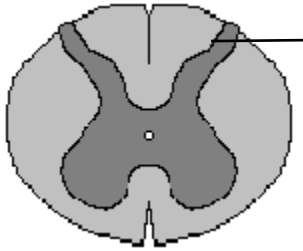


α 2a sedation

α 2c anxiolysis

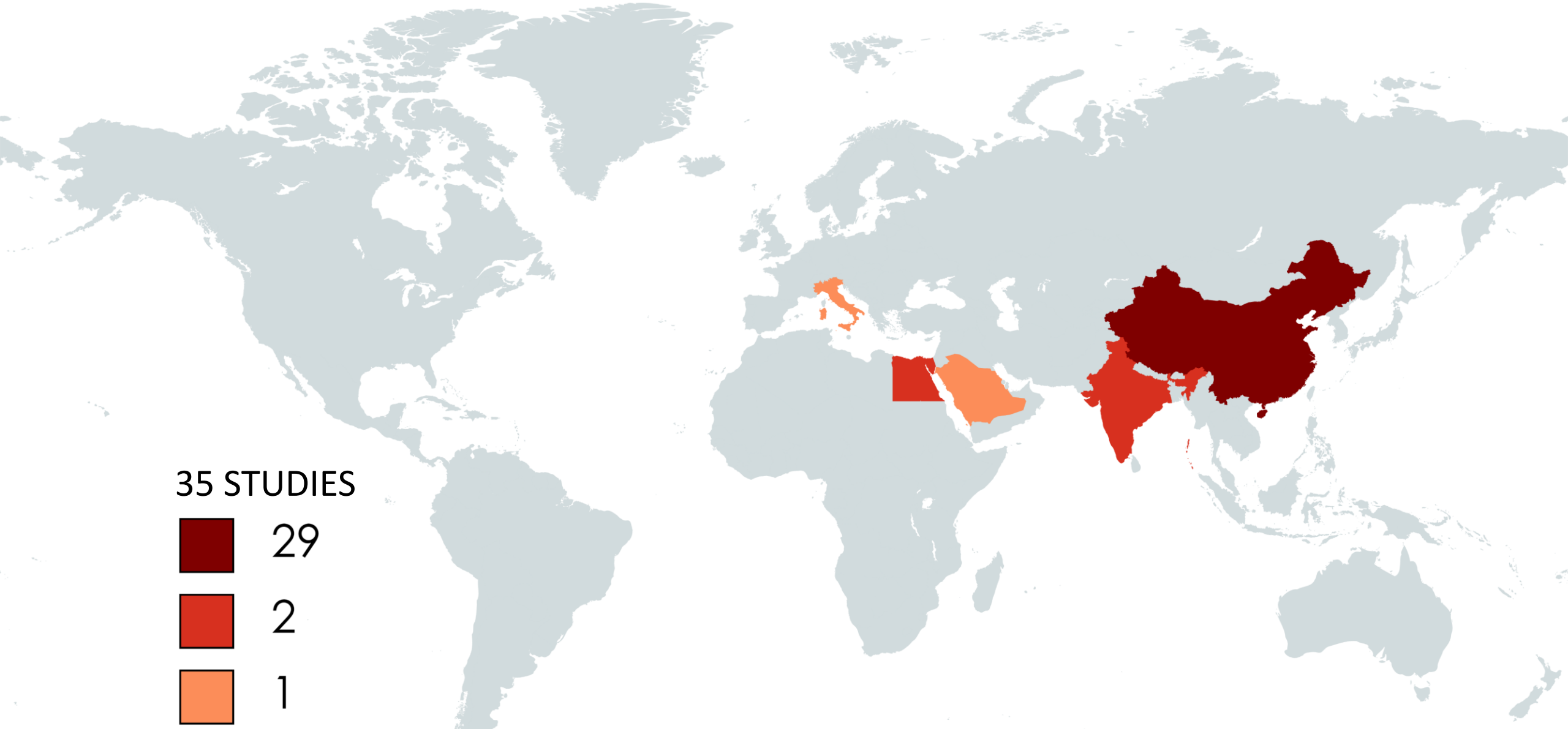
- ↓ NE release
- Sympatolysis

α 2a analgesia



- a2-independent mechanism
- limit firing and rate of substance P release
- Direct inhibition of the signaling pathway

ANALGESIC OUTCOMES

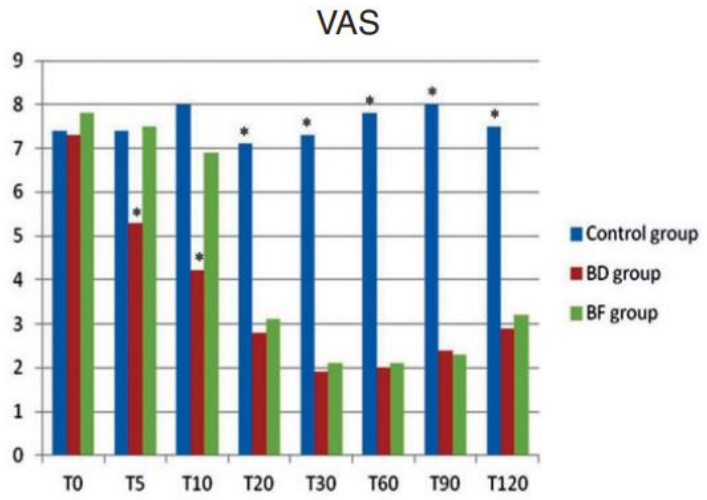

35 STUDIES
29
2
1

INTENSITY

BUPI + FENTA vs DEX

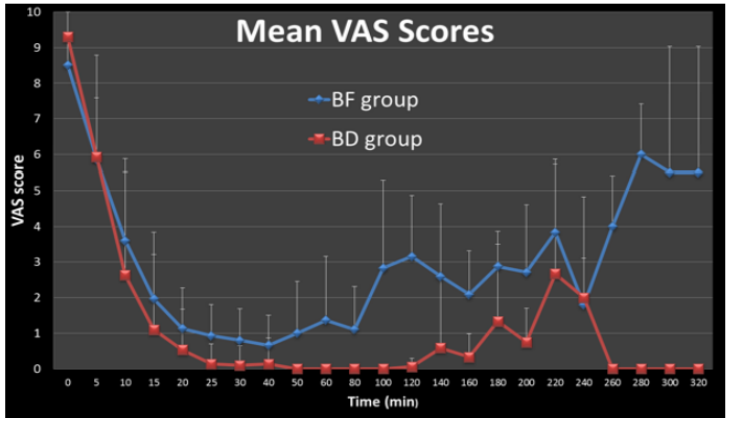
❖ **BETTER QUALITY OF PAIN RELIEF WITH DEX**

17 ml: 0.25% B ± 1µg/kg D or F



15 ml: 0.0625 % B + 1.5 µg/ml D or 2 µg/ml F

VAS > 4 bolus 5ml



14 ml: 0.25% B + 1µg/kg D or F

Bolus if pain

Variables	Group D (n=85)	Group F (n=85)	P-value
Pain verbal scale			
0	58	45	0.041
1	13	4	0.021
2	2	8	0.050
3	9	12	0.484
4	3	16	0.002

M. F. Selim et al. Journal of Prenatal Medicine 2012; 6 (3): 47-54

Harsoor et al. J. Evid. Based Med. Healthc., Vol. 3/Issue 91/Nov. 14, 2016

Soliman et al. Journal of Anesthesiology & Clinical Science 2016

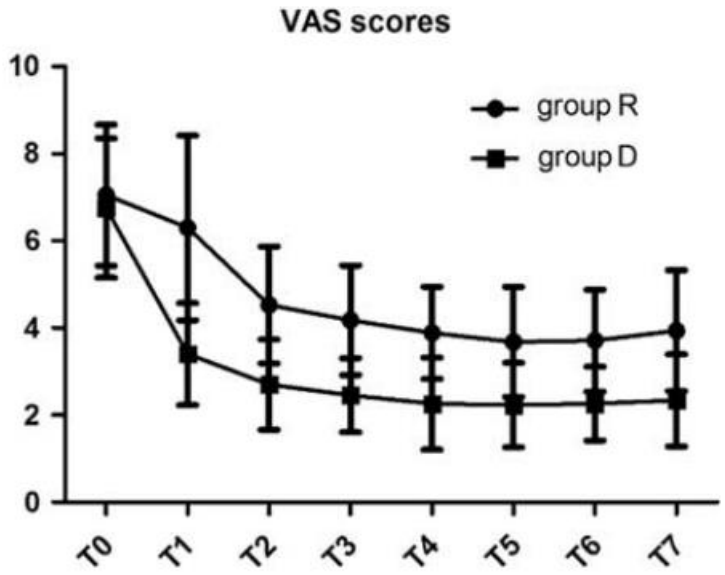
INTENSITY

ROPI ± DEX

ROPI + SUF vs DEX

❖ **LOWER VAS WITH DEX WHEN CERVICAL DILATION > 3**

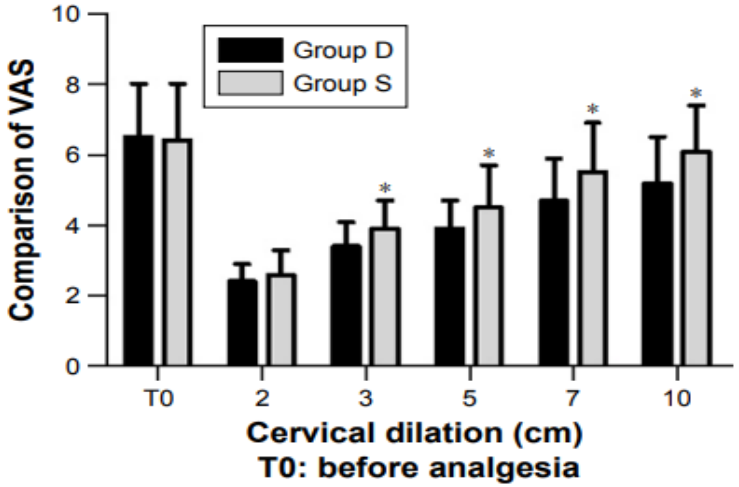
0.125% ropivacaine ± dex (0.5 mg/kg as bolus only)
n = 40



Yang Zhao et al. Clin J Pain Volume 33, Number 4, April 2017

10 ml bolus: 0.1% ropi + suf vs dex (0.5µg/ml)

PCEA: 6ml/h, 6ml /20min ; n= 70



Zhang et al. Drug Design, Development and Therapy 2019:13 1171–1175

OTHER VARIABLES

BUPI + FENTA vs DEX

❖ **BETTER ONSET, DURATION, AND ANESTHETIC REQUIREMENTS**

BUPI 0.25%	FENTA 1µg/kg	DEX 1µg/kg	Statistic significance
ONSET min	7 – 13	4 - 9	+
DURATION min	110 - 118	125 - 185	+
SECOND DOSE	1/3	1/7	+

BUPI 0.0625%
+ 2 F or 1.5 D

Group	BF	BD	p value
Onset (mins.)	6.00±2.034	5.33±1.269	0.133
Duration of analgesia (mins.)	85.33±22.512	131.83±45.760	<0.0001
Number of top ups	1.80±1.518	0.17±0.461	<0.0001
Episiotomy/suturing without local anaesthetic (number)	1	28	<0.0001

M. F. Selim et al. Journal of Prenatal Medicine 2012; 6 (3): 47-54

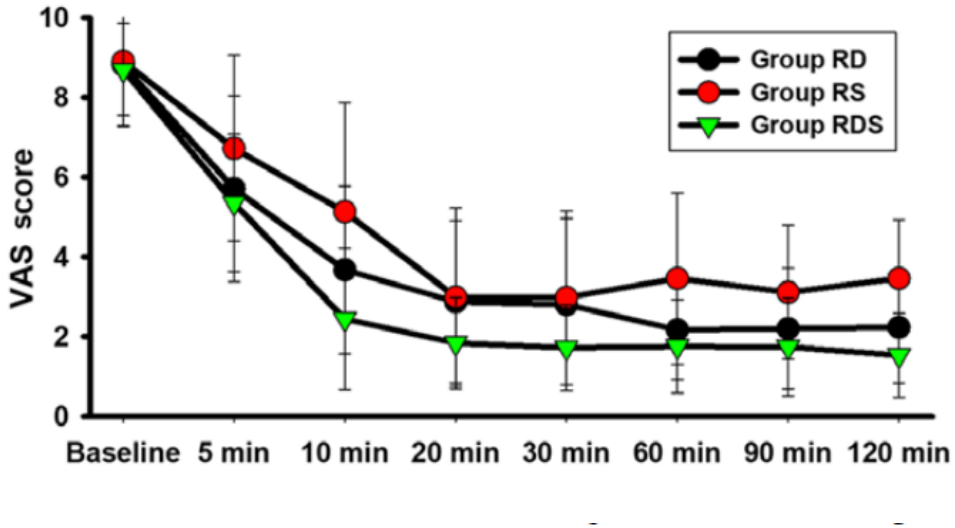
Harsoor et al. J. Evid. Based Med. Healthc., Vol. 3, 2016

Soliman et al. Journal of Anesthesiology & Clinical Science 2016

Experimental and Therapeutic Medicine

Combination of sufentanil, dexmedetomidine and ropivacaine to improve epidural labor analgesia effect: A randomized controlled trial

❖ **RD, RDS > RS**



Bolus 10 ml + PCEA
RD: 0.1% + 0.5 μg/ml
RS: 0.1% + 0.5 μg/ml
RDS: 0.1% + 0.25 μg/ml + 0.25 μg/ml

Variable	Group RS (n=35)	Group RD (n=36)	Group RDS (n=36)	P-value
Onset time (min)	15.50±2.67	12.97±3.13	9.68±1.26[a,c]	0.037
Total volume of anesthetic solution (ml)	65.44±5.64	42.65±6.44	50.34±6.56[a]	0.043
Bolus frequency	2.80±0.92	0.10±0.31[a]	0.80±0.78[a]	0.026

Li et al. EXPERIMENTAL AND THERAPEUTIC MEDICINE 20: 454-460, 2020

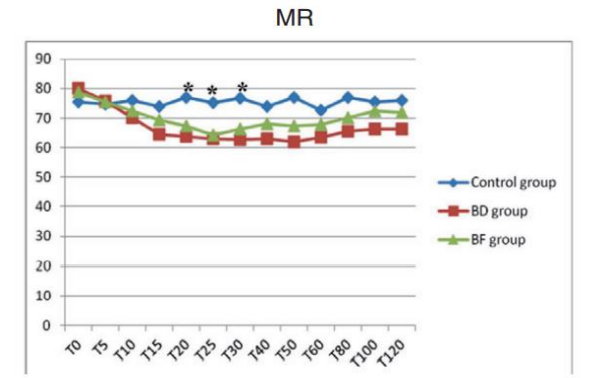
HEMODYNAMIC MEASUREMENTS

BLOOD PRESSURE ; HR

BUPI + FENTA vs DEX

- **RISK OF MATERNAL HYPOTENSION OR BRADYCARDIA ?**
- **NO TREATEMENT NEEDED**

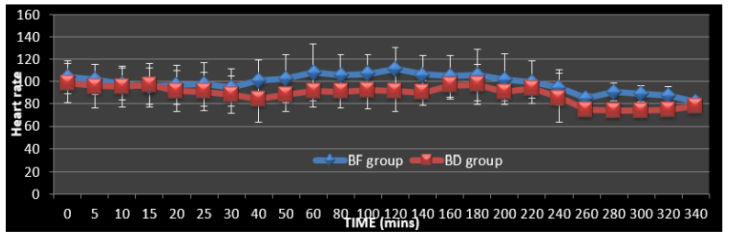
1 bolus 17 ml: 0.25% B + 1µg/kg D or F



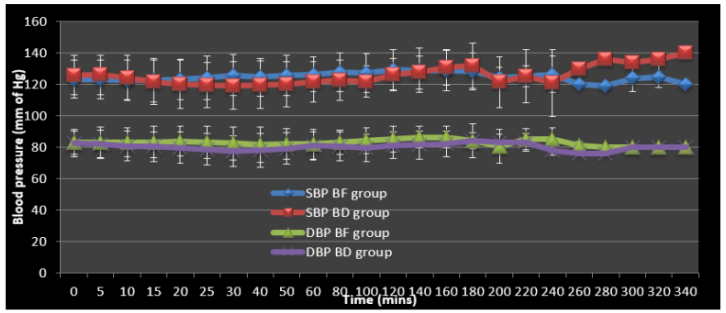
M. F. Selim et al. Journal of Prenatal Medicine 2012; 6 (3): 47-54

15 ml: 0.0625 % B + 1.5 µg/ml D or 2 µg/ml F

VAS > 4 bolus 5ml



Graph 3. Maternal Heart Rate

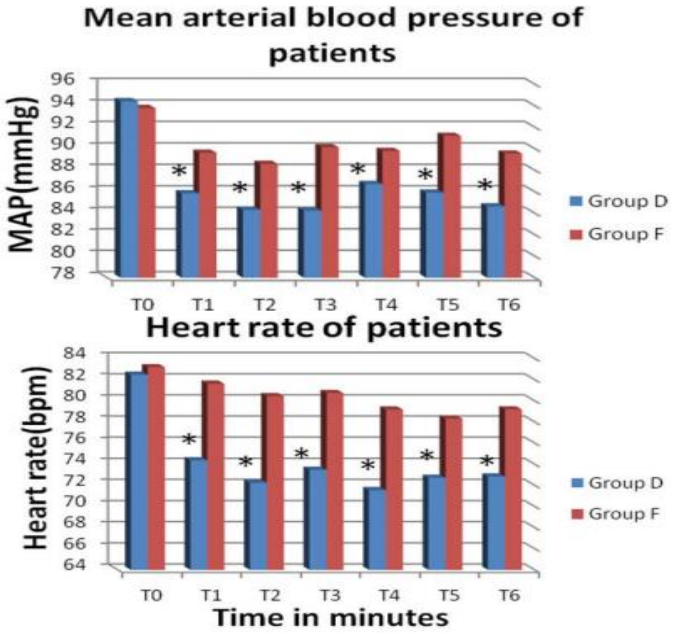


Graph 4. Maternal Blood Pressure (Systolic and Diastolic Blood Pressure)

Harsoor et al. J. Evid. Based Med. Healthc Vol. 3/Issue 91/Nov. 14, 2016

14 ml: 0.25% B + 1µg/kg D or F

Bolus if pain



Soliman et al. Journal of Anesthesiology & Clinical Science 2016

BLOOD PRESSURE ; HR

ROPI + SUF vs DEX

- **NO SIGNIFICANT DIFFERENCE**

Event	Group RS (n=35) (%)	Group RD (n-36) (%)	Group RDS (n=36) (%)	P-value
Hypotension	0 (0.0)	1 (2.8)	0 (0.0)	1.000
Bradycardia	0 (0.0)	1 (2.8)	0 (0.0)	1.000

Li et al Experimental and therapeutic medicine 20: 454-460, 2020

	Group D (n=36)	**Group S (n=34)**	***P*-value**
Hypotension	0	0	1
Maternal bradycardia	0	0	1

Zhang et al. Drug Design, Development and Therapy 2019:13 1171–1175

OBSTETRIC AND NEONATAL OUTCOMES

BUPI + FENTA vs DEX
ROPI + SUF vs DEX

- ↓ Duration of 1st stage of labor (30 - 100min, statistically significant with ropi)*

❖ **No clinical nor statistical significant difference**

- Duration of 2nd stage of labor
- Instrumental delivery
- C- section

- Fetal heart rate
- APGAR 1 / 5 min
- Umbilical cord pH
- Uretro placental blood flow

M. F. Selim et al. Journal of Prenatal Medicine 2012; 6 (3): 47-54
Soliman et al. Journal of Anesthesiology & Clinical Science 2016
Harsoor et al. J. Evid. Based Med. Healthc Vol. 3/Issue 91/Nov. 14, 2016
Zhang et al. Drug Design, Development and Therapy 2019:13 1171–1175
Li et al. EXPERIMENTAL AND THERAPEUTIC MEDICINE 20: 454-460, 2020

ADVERSE REACTIONS

GENERAL

BUPI + FENTA vs DEX

ROPI + SUF vs DEX

- **Significantly less reactions with BD compared BF**
- **Dex is effective in reducing pruritus when associated with suf**

%	BF	BD	RS	RD	RDS
Nausea	12-20	4-5			
Vomiting	7	2			
Pruritus	10-14	0-2	5	0	0
Respiratory depression	0-5	0			
shivering	12	4			
Dry mouth	4	12			

M. F. Selim et al. Journal of Prenatal Medicine 2012; 6 (3): 47-54
Soliman et al. Journal of Anesthesiology & Clinical Science 2016
Harsoor et al. J. Evid. Based Med. Healthc Vol. 3/Issue 91/Nov. 14, 2016
Zhang et al. Drug Design, Development and Therapy 2019:13 1171–1175
Li et al. EXPERIMENTAL AND THERAPEUTIC MEDICINE 20: 454-460, 2020

NEUROLOGICAL

BUPI + FENTA vs DEX

ROPI + SUF vs DEX

- **Dex ↑ motor block and sedation**
- **No excessive sedation**

Variable	Group BD (n=44)	Group BF (n=43)
Motor block (maximum bromage score) 0-1-2-3(n)	40-4-0-0	38-6-0-0
Sedation score of 1-2-3-4 (n)	20-24-0-0*	33-10-0-0

M. F. Selim et al. Journal of Prenatal Medicine 2012; 6 (3): 47-54

Variables	Group D (n=85)	Group F (n=85)	P-value
Motor block	14	3	0.004
Sedation	9	0	0.002

Soliman et al. Journal of Anesthesiology & Clinical Science 2016

Group	BF (Number)	BD (Number)	p value
Bromage Scores (0-1-2-3)	28-2-0-0	17-12-1-0	0.004
Ambulation	26	3	<0.0001

Harsoor et al. J. Evid. Based Med. Healthc., Vol. 3/Issue 91/Nov. 14, 2016

Variable	Group RS (n=35)	Group RD (n=36)	Group RDS (n=36)	P-value
Bromage score (1/2/3/4)	27/2/1/0	9/19/2/0[b]	22/8/0/0[d]	0.000

Li et al. EXPERIMENTAL AND THERAPEUTIC MEDICINE 20: 454-460, 2020

NEUROTOXICITY

Local anesthetics neurotoxicity?

The efficacy and neurotoxicity of dexmedetomidine administered via the epidural route

Konakci, S.*; Adanir, T.*; Yilmaz, G.*; Rezanko, T.†

Author Information

European Journal of Anaesthesiology 25(5):p 403-409, May 2008. | **DOI:** 10.1017/S0265021507003079

21 New Zealand white rabbits
Epidural catheter
Lido (2%) / Lido (2%) + dex (5 µg) / Dex (10 µg)

- No differences between the groups for ischaemia of the medulla spinalis
- Evidence of demyelinization of the oligodendrocytes in the white matter in Group D > L (P = 0.035)

Evaluation of the neurotoxicity of intrathecal dexmedetomidine on rat spinal cord (electromicroscopic observations)

Saudi Journal of Anesthesia / Volume 12 / Issue 1 / January-March 2018

0.1 ml Intrathecal, rats
10 µg dex / 0.9% NaCl

- A single intrathecal dose of dexmedetomidine did not lead to histologic neurotoxicity

APM ANNALS OF PALLIATIVE MEDICINE
AN OPEN ACCESS JOURNAL FOR HIGH-QUALITY RESEARCH IN PALLIATIVE MEDICINE
IMPACT FACTOR 1.925
Vol 11, No 4 April 2022

Efficacy and safety of dexmedetomidine-ropivacaine versus sufentanil-ropivacaine for epidural labor analgesia: a randomized controlled trial

Mei Fan et al.

❖ No difference in clinical practice …

- 10 mL loading dose
- RD: 0.1% ropivacaine + 0.5 μg/mL dex (80)

vs

- RS: 0.1% ropivacaine + 0.5 μg/mL suf (80)
- CEI rate of 6 mL/h
- PCEA: bolus 6 mL / 20 min

Heart rate (beats/min)	82.6±8.0	86.4±11.5	0.016[a]

SYSTEMATIC REVIEW Submitted: 04 September, 2021 Accepted: 27 September, 2021 Published: 08 January, 2023 DOI:10.22514/sv.2021.242 Signa Vitae

Comparison of dexmedetomidine and lipophilic opioids as adjuvants to local anesthetics for epidural labor analgesia: a meta-analysis of randomized controlled trials

Shi-ke Yang1,*, Min Liu1 , Jie Chen1 , Yuan-yuan Yang1 , Fang-zheng Zhuan1 , Wen-qun Sun1 , De-zhi Mao1

12 Studies

Study	Participants	Intervention (sample size)	Control (sample size)	Anesthetic administration	Outcomes
Selim MF 2012 [9] Egypt	Primiparas and multiparas	0.25% Bupivacaine 12 mL + DEX 1 μg/kg = 17 mL (44)	0.25% Bupivacaine 12 mL + Fentanyl 1 μg/kg = 17 mL (43)	Bolus injection + rescue	1, 3, 4, 5, 7.
Karuna H 2016 [17] Bangalore	Primiparas	0.0625% Bupivacaine + DEX 1.5 μg/mL = 15 mL (30)	0.0625% Bupivacaine + 2 μg/mL Fentanyl = 15 mL (30)	Bolus injection + rescue	1, 3, 4, 5.
Zhang T 2019 [23] China	Primiparas	0.1% Ropivacaine + DEX 0.5 μg/mL (36)	0.1% Ropivacaine + Sufentanil 0.5 μg/mL (34)	CEI + PCEA	1, 2, 3, 4, 5, 6.
Cheng Q 2019 [24] China	Primiparas	0.125% Ropivacaine + DEX 0.5 μg/mL (40)	0.125% Ropivacaine + Sufentanil 0.5 μg/mL (40)	CEI + PCEA	1, 2, 3, 4, 5, 6.
Cheng Q 2019 [24] China	Primiparas	0.08% Ropivacaine + DEX 0.5 μg/mL (40)	0.08% Ropivacaine + Sufentanil 0.5 μg/mL (40)	CEI + PCEA	1, 2, 3, 4, 5, 6.
Soliman R 2016 [25] Saudi Arabia	Primiparas and multiparas	0.25% Bupivacaine 13 mL + DEX 1 μg/kg = 15 mL (85)	0.25% Bupivacaine 13 mL + Fentanyl 1 μg/kg = 15 mL (85)	Bolus injection + rescue	3, 4, 5, 6.
Huang Y 2016 [26] China	Primiparas	0.1% Levobupivacaine + DEX 0.5 μg/mL (60)	0.1% Levobupivacaine + Sufentanil 0.5 μg/mL (60)	CEI + PCEA	1, 2, 3, 4, 5.
Zhu X 2018 [27] China	Primiparas	0.1% Ropivacaine + DEX 2 μg/mL (56)	0.1% Ropivacaine + Sufentanil 0.5 μg/mL (56)	CEI + PCEA	1, 2, 5, 6.
Mao S 2017 [28] China	Primiparas	0.1% Ropivacaine + DEX 0.5 μg/mL (40)	0.1% Ropivacaine + Sufentanil 0.5 μg/mL (40)	CEI + PCEA	1, 2, 3, 4, 5, 6.
Shen S 2020 [29] China	Primiparas	0.1% Ropivacaine + DEX 1 μg/mL (60)	0.1% Ropivacaine + Fentanyl 2 μg/mL (60)	PIEB + PCEA	1, 2, 3, 4, 5.
Tang Y 2019 [30] China	Primiparas	0.09% Ropivacaine + DEX 0.5 μg/mL (33)	0.09% Ropivacaine + Sufentanil 0.5 μg/mL (30)	PIEB + PCEA	1, 2, 3, 4, 5, 7.
Yu C 2020 [31] China	Primiparas	0.1% Ropivacaine + DEX 0.5 μg/mL (30)	0.1% Ropivacaine + Fentanyl 2 μg/mL (30)	PIEB + PCEA	1, 2, 4, 5, 7.

DEX, dexmedetomidine; CEI, continuous epidural infusion; PCEA, patient-controlled epidural analgesia; PIEB, programmed intermittent epidural bolus.
1: visual analogue scale (VAS) scores, 2: duration of labor, 3: mode of delivery, 4: maternal complications, 5: neonatal Apgar scores, 6: umbilical cord blood gas, 7: total analgesic consumption.

SYSTEMATIC REVIEW

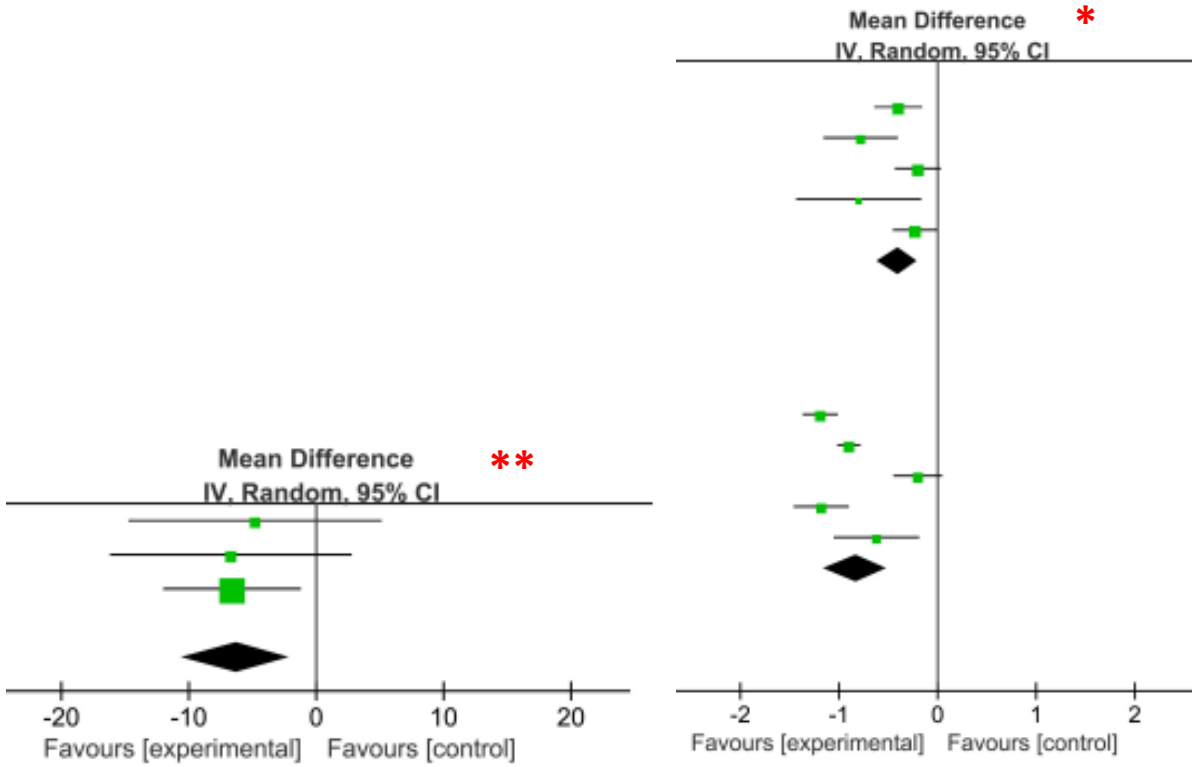
Submitted: 04 September, 2021 Accepted: 27 September, 2021 Published: 08 January, 2023 DOI:10.22514/sv.2021.242

Signa Vitae

Comparison of dexmedetomidine and lipophilic opioids as adjuvants to local anesthetics for epidural labor analgesia: a meta-analysis of randomized controlled trials

Shi-ke Yang1,*, Min Liu1 , Jie Chen1 , Yuan-yuan Yang1 , Fang-zheng Zhuan1 , Wen-qun Sun1 , De-zhi Mao1

- ↓ VAS 30 minutes after induction *
- ↓ VAS on delivery
- ↓ Analgesic consumption **
- ↓ Duration of the 1st and 2nd stage of labor
- ↓ Nausea, vomiting, pruritus, shivering
- ↑ Bradycardia and motor blockade



DOSE DETERMINATION

Drug Design, Development and Therapy

Received: 30 October 2021 Accepted: 19 February 2022 Published: 6 March 2022

Determination of the Dose-Response Relationship of Epidural Dexmedetomidine Combined with Ropivacaine for Labor Analgesia

Jian-Xin et al.

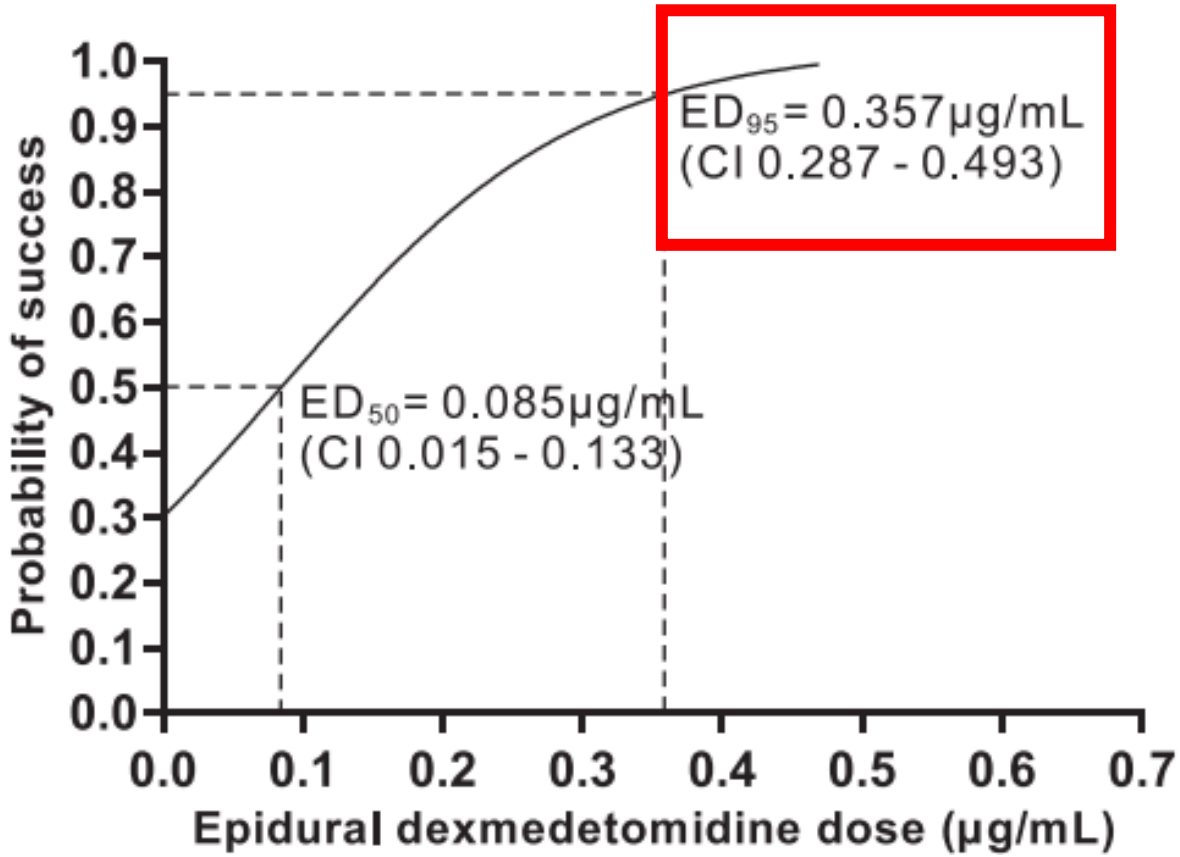
- 0.075% ropi

+ DEX groups of different concentration (20)

- Primary outcome:

Effective rates of labor analgesia for different doses of dexmedetomidine at 30 min of administration

❖ **Clinically recommended 0.4 μg /ml**



LA CONCENTRATION

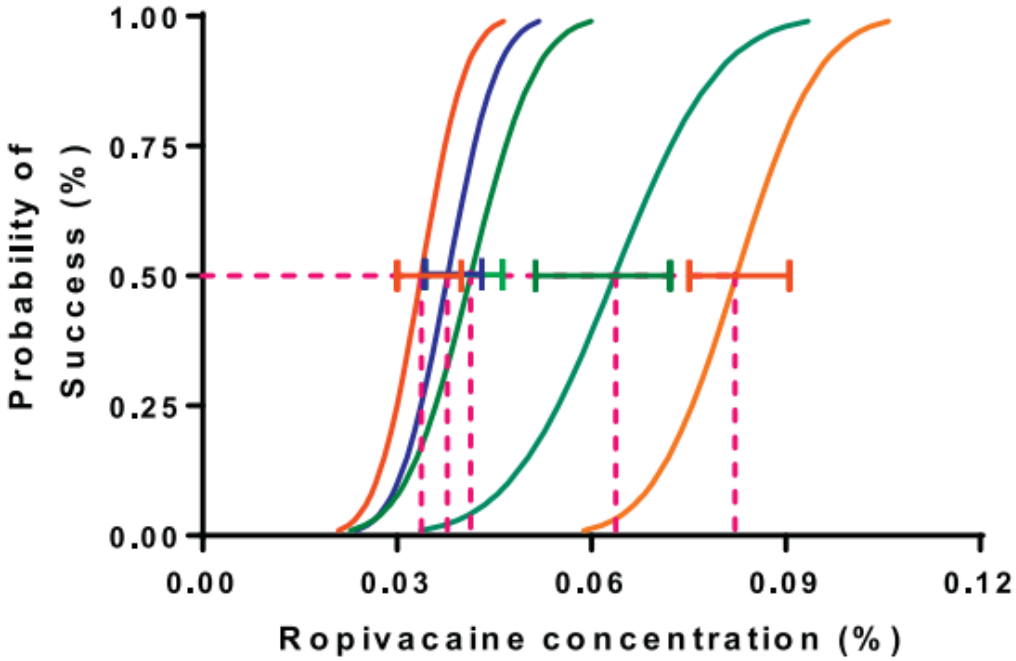
10 ml ropivacaine ± 0.5µg/ml dex

In each group the initial concention of ropi was 0.1% for the first patient
If analgesic effect of the previous patient was adequate, the concentration of ropivacaine for the next patient was decreased by 0.01%

Outcome: median effective concentration (EC50) of epidural ropivacaine for labor analgesia

Adjuvant	None	Dex 0.5µg/ml	Clo 60 µg	suf 5µg/ml
Ropi EC 50 %	0.083	0.062	0.035	0.023

	Concentration (µg/ml)	Ropi EC 50 (%)	Ropi EC 95 (%)
group 0	0	0.082	0.095
group 0.3	0.3	0.064	0.080
group 0.4	0.4	0.041	0.052
group 0.5	0.5	0.034	0.041
group 0.6	0.6	0.038	0.046



L. Liu et al. Journal of Clinical Anesthesia 68 (2021) 110115

Journal of INTERNATIONAL MEDICAL RESEARCH

Intrathecal dexmedetomidine improves epidural labor analgesia effects: a randomized controlled trial

Gehui Li1 , et al.

- Group C: 1 mL Nacl 0.9%
- Group D: 5 μg Dex
- Group S: 5 μg suf
- PCEA 0.1% ropi + 0.2 μg /ml suf

Time (minutes)	Group C (n = 36)	Group D (n = 36)	Group S (n = 35)	*P*-value
Baseline	8.91 ± 3.05	9.01 ± 3.11	9.13 ± 2.35	0.964
5	8.53 ± 2.11	4.32 ± 2.98[b]	4.51 ± 2.15[b]	<0.001
10	5.22 ± 1.91	2.98 ± 1.99[b]	2.86 ± 1.63[b]	<0.001
15	3.56 ± 2.89	2.95 ± 2.12[b]	2.67 ± 1.87[b]	<0.001
20	2.91 ± 2.15	2.66 ± 2.33	2.59 ± 2.19	0.770
30	2.64 ± 2.55	2.53 ± 2.16	2.37 ± 1.19	0.847
60	2.74 ± 2.55	4.57 ± 3.55	4.13 ± 2.81	0.054
Onset time (minutes)	19.69 ± 3.11	8.39 ± 3.41[b]	7.78 ± 2.21[b]	<0.001*
Duration of intrathecal injection (minutes)	0.00	48.41 ± 2.55[b]	50.85 ± 2.27[b]	<0.001*
Total volume of anesthetic solution (mL)	56.65 ± 4.17	43.44 ± 2.14[b]	44.34 ± 2.33[b]	<0.001*
Bolus frequency	6.51 ± 2.21	4.50 ± 1.21[a]	4.62 ± 1.01[a]	0.001*
Bromage score (1/2/3/4)	36/0/0/0	36/0/0/0	35/0/0/0	1.000#
Hypotension	1 (2.8)	1 (2.8)	0 (0.0)	1.000
Bradycardia	1 (2.8)	2 (5.6)	1 (2.9)	1.000
Nausea	1 (2.8)	0 (0.0)	1 (2.9)	1.000
Vomiting	0 (0.0)	0 (0.0)	0 (0.0)	1.000
Shivering	4 (11.1)	0 (0.0)[a,c]	6 (17.1)	0.046
Pruritus	1 (2.8)[a]	0 (0.0)[a,c]	5 (14.3)	0.025
Excessive sedation	1 (2.8)	2 (2.8)	2 (5.7)	0.803

C-SECTION

Journal of Clinical Medicine

Published: 21 November 2022

Sufentanil vs. Dexmedetomidine as Neuraxial Adjuvants in Cesarean Section: A Mono-Centric Retrospective Comparative Study

Antonio Coviello et al.

MDPI

Intrathecal Bupivacaine 0.5% 10 mg + dex 10 µg vs Suf 5 µg

OUTCOMES	DEX (n=24)	SUF (n= 28)	Statistical significance
Time to onset sensory block min	7.3	7.4	
Hypotension	7	8	
Bromage score 1	24	28	
VAS h24	**4 ± 2**	**2 ± 1**	*
Flatus time ≤ 12h	**24**	**7**	*
Shivering	0	2	
Nausea	1	4	
Vomiting	1	4	
Itching	**0**	**10**	*
APGAR score 1 and 5 min > 7	24	28	

- **Suf ↑ postoperative analgesia**
- **Dex ↓ pruritus**
- **↔ Hypotension**

Experimental and Therapeutic Medicine

Addition of dexmedetomidine to epidural morphine to improve anesthesia and analgesia for cesarean section

YANG et al., 2020

12 ml bolus: 0.75% ropi + Mo 2mg ± Dex 0.5 µg/kg
PCEA 48h

OUTCOMES	Mo (40)	Mo + Dex (40)	Statistical significance
Level of sensory block	T6	T6	
NRS at incision	0	0	
Visceral pain	28	19	*
NRS at peritoneal traction	5	0	
Rescue sufenta IV	26	15	*
Ramsay sedation score 0 , 4 and 12h	2	3	*
NRS post operative	4.5	0	

- **↓ intra and post-operative visceral pain**
- **Better sedation during and following delivery**
- **No influence on morphine-associated side effects**

Biological and Pharmaceutical Bulletin

Vol. 39, No. 9. 1455–1460 (2016)

Comparison of Intrathecal Dexmedetomidine with Morphine as Adjuvants in Cesarean Sections

Xiaofei Qi et al.

2 mL: Bupi 0.5% alone vs ± Dex 5 µg vs ± Mo 100 µg

OUTCOMES	BD (40)	BM (40)	B (39)	Statistical significance
Sensory onset (min)	6.5 ± 1.3	7.8 ± 2.3	7.4 ± 2.2	+ ++
Motor onset (min)	4.8 ± 1.3	5.9 ± 2	5.8 ± 1.9	+ ++
Sensory regression (min)	253 ± 42	192 ± 40	188 ± 37	+ ++
Motor regression (min)	226 ± 40	161 ± 40	162 ± 25	+ ++
VAS intraoperative	0.5 ± 0.5	0.5 ± 0.5	0.5 ± 0.5	
VAS postoperative ≤ 24h	2.7 ± 1.2	2.7 ± 1.2	3.5 ± 1.5	+
Time to first analgesic (h)	17 ± 6	16 ± 6	3.5 ± 1.6	+
Total volume analgesics 24h	16 ± 5	19 ± 5		+
Total volume analgesics 48h	103 ± 20	115 ± 32	150 ± 31	+
Shivering	3	12	14	+ ++
Pruritus	0	13	1	+ ++

- ↑ Sensory and motor blockade
- ↔ Analgesic effects
- ↓ Side effects
- No obvious side effects on neonates

BioMed Research International

Volume 2022

Hindawi

The Anesthetic Effect and Safety of Dexmedetomidine in Cesarean Section: A Meta-Analysis

Gang Pang et al.

8 studies _(epidural and spinal)

Study (year)	Experimental group (n)	Control group (n)
Hanoura (2013) [18]	2 ml of spinal anesthesia 0.5% bupivacaine+10 ml of epidural injection 0.25% bupivacaine+dexmedetomidine 1 μ/kg and fentanyl 100 μg ($n = 25$)	2 ml of lumbar anesthesia 0.5% bupivacaine+10 ml of epidural injection 0.25% bupivacaine+fentanyl 100 μg (25)
Li (2015) [19]	Lumbar anesthesia 10 mg bupivacaine+10 μg dexmedetomidine (21)	Lumbar anesthesia 10 mg bupivacaine (21)
Liu (2015) [20]	1.5 ml of lumbar anesthesia 0.5% bupivacaine+0.5 μg/kg dexmedetomidine (40); 1.5 ml of lumbar anesthesia 0.5% bupivacaine+1 μ/kg dexmedetomidine (40) ($n = 80$)	1.5 ml of lumbar anesthesia 0.5% bupivacaine+20 ml of 0.9% sodium chloride injection ($n = 40$)
Nasseri (2017) [21]	Lumbar anesthesia 12.5 mg 0.5% bupivacaine+5 μg dexmedetomidine (25)	Lumbar anesthesia 12.5 mg 0.5% bupivacaine+0.5 ml of 0.9% sodium chloride injection (25)
Sun (2015) [22]	2 ml of lumbar anesthesia 0.5% bupivacaine+10 μg dexmedetomidine (30)	2 ml of lumbar anesthesia 0.5% bupivacaine+1.0 ml of 0.9% sodium chloride injection (30)
Yousef (2015) [23]	1.5 ml of spinal anesthesia 0.5% bupivacaine+10 ml of epidural infusion 0.25% bupivacaine+1 ml of dexmedetomidine 0.5 WG/kg+1 ml of fentanyl 50 μg (40)	1.5 ml of spinal anesthesia 0.5% bupivacaine+10 ml of epidural injection 0.25% bupivacaine+1 ml of 0.9% sodium chloride injection+1 ml of fentanyl 50 μg (40)
Qi (2016) [24]	2 ml of 0.5% bupivacaine containing 5 μg of dexmedetomidine ($n = 40$)	2 ml of 0.5% bupivacaine alone ($n = 40$)
Xia (2018) [25]	Bupivacaine+5 mcg dexmedetomidine (45)	Bupivacaine+the same volume of saline (45)

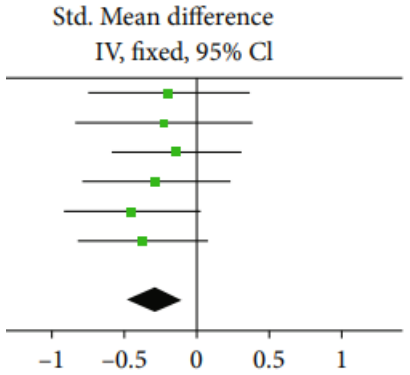
BioMed Research International

Volume 2022

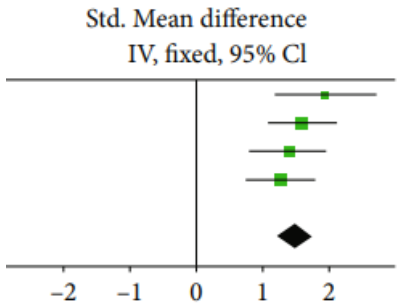
The Anesthetic Effect and Safety of Dexmedetomidine in Cesarean Section: A Meta-Analysis

Gang Pang,1 Yuanmao Zhu,2 Yan Zhou , 3 and Shanshan Tong

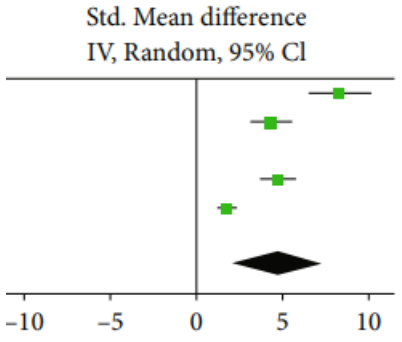
- ↓ peak time
- ↑ Duration of the sensory block
- ↑ Onset of the first postoperative pain
- ↓ Postoperative pain
- ↓ Nausea, vomiting, chills, and fever
- Stable hemodynamics



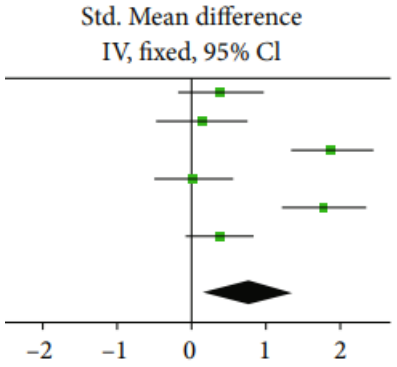
peak time of sensory block plane.



duration of sensory block



time to first analgesics.



recovery of motor block.

LIMITATIONS

LIMITATIONS

- Not licensed for epidural/ intrathecal use (swissmedic/FDA)
- Lack of europeen or American studies
- Limited number of studies
- Single-center clinical trial
- Small number of patients
- One part of the world
- Limited studies comparing Dex to Clo a frequently used adjuvant

SUMMARY OF OUTCOMES

Intensity of analgesia	++
Onset time	↓↓
Duration of analgesia	↑↑
LA sparing effect	↓↓ vol and concentration
Hypotension	-
Bradycardia	↑ not clinical significant, no treatment required
Nausea	-
Vomiting	-
Shivering	↓↓
Motor block	↑ dependent on LA concentration
Sedation	↑ No excessive sedation
Neonatal outcomes	No difference
Labor outcomes	Shorter 1st stage

TAKE HOME MESSAGES

- Dex seems to be an interesting molecule for labor analgesia
- Effects on the mother and newborn needs further research before clinical promotion for neuraxial use
- Large-scale multicenter phase IV clinical trials with larger sample size

THANK YOU