reference	participants' characteristics	intervention group/ control group	outcomes	critical appraisal/ conclusion
Elhakim et al. 2010 Effect of epidural dexmedetomidine on intraoperative awareness and post-operative pain after one-lung ventilation. Acta Anaesthesiol Scand. 2010;54(6):703-9.	**inclusion criteria** - age 40–60 yrs - ASA physical status II–III **exclusion criteria** - BMI >30 kg/m^2 - age >60 yrs - allergy to bupivacaine or any other anaesthetic drugs - renal or hepatic insufficiency - neurological or psychiatric diseases - therapy with sedative drugs affecting EEG activity **demographic data**: group D group B age (yrs) 52 (44–54) 50 (43–55) weight (kg) 80 (59–81) 85 (62–86) height (cm) 168 (164–170) 167 (163–169) ASA physical status II 12 (48%) 14 (56%) III 13 (52%) 11 (44%) **patient flow and follow up:** total patient number included: 50 randomised in: - group D: 25 - group B: 25 excluded: 0 analysed: 50 follow-up: every 6 h for 1 day	**intervention prior to anaesthesia** - group D: 1 mg/kg epidural dexmedetomidine with 0.5% bupivacaine - group B: 0.5% bupivacaine alone after induction **mode of anaesthesia** - fentanyl - TEA started before surgery, titration according to the initial dose and weight of the patient **surgical approach** - open thoracotomy for lung surgery and OLV **postoperative analgesia** - TEA: 0.25% bupivacaine 6–8 mL/h with or without 0.2 µg/kg/h dexmedetomidine **supplemental analgesia** - IV paracetamol 1 g/6 h given at the patient's request - epidural administration of 0.25% bupivacaine 6–8 mL/h with or without 0.2 µg/kg/h dexmedetomidine in groups D and B respectively.	**postoperative pain during the first 24 h [VRS]: median (IQR)** h group D group B 6 1 (0.9–1.6) 3 (1.8–3.4) S 12 1.3 (1.1–1.6) 3.5 (1.9–3.6) S 18 1.5 (1.0–1.6) 3.6 (2.1–3.8) S 24 1.8 (1.2–1.9) 3.1 (2.2–3.3) S **supplementary analgesia** paracetamol consumption, full dose n, group D group B 0 12 S **adverse effects/ events:** - not significant	**methodological shortcomings** - primary and secondary outcome measures not clearly defined - not reported how sample size was determined and no explanation of any interim analyses and/or stopping rules - method used to generate the random allocation sequence, including details of any restriction not reported - method used to implement the random allocation sequence not reported - not reported whether the sequence was adequately concealed until interventions were assigned - not reported who generated the allocation sequence, who enrolled participants, and who assigned the participants to their groups **level of evidence: 1** **authors' conclusion** "In thoracic surgery with one-lung ventilation (OLV), the use of epidural dexmedetomidine decreases anaesthetic requirements significantly, prevents awareness during anaesthesia and improves intraoperative oxygenation and post-operative analgesia"
Lee et al. 2012 Effect of epidural magnesium on the incidence of chronic postoperative pain after video-assisted thoracic surgery. J Cardiothorac Vasc Anesth. 2012;26(6):1055-9.	**inclusion criteria** - age 18–65 yrs - ASA physical status I–III **exclusion criteria** - any communicative or psychotic disorders - hepatic, renal, or cardiovascular dysfunction - allergies to local anaesthetics or magnesium sulphate - active infection at the injection site - coagulopathy - a history of drug abuse - currently taking any other pain medication - pre-existing motor or sensory deficits - patient refusal **demographic data**: group C group M	**intervention prior to anaesthesia** - group C: 5 mL normal saline - group M: 100 mg magnesium sulphate - both epidurally **mode of anaesthesia** - remifentanil **surgical approach** - elective unilateral VATS **at the end of surgery** - TEA: 0.375% ropivacaine 10 mL through the epidural catheter - group C, CI of 0.2% ropivacaine 226 mL + fentanyl 1200 µg - group M, magnesium sulphate 500 mg **postoperative analgesia**	**postoperative pain [VAS]: median (interquartile range))** group C group M p resting 1 h 3.0 (1.0-4.0) 2.0 (1.0-4.0) 0.5220 12 h 2.0 (1.0-4.5) 1.0 (1.0-3.0) 0.0461 24 h 1.0 (1.0-3.0) 1.0 (1.0-2.0) 0.0421 48 h 1.0 (1.0-2.0) 1.0 (1.0-2.0) 0.0863 coughing 1 h 5.0 (1.0-6.0) 5.0 (1.0-6.0) 0.6606 12 h 4.0 (2.0-6.0) 3.0 (2.0-5.0) 0.2070 24 h 3.0 (2.0-4.5) 3.0 (1.0-3.0) 0.2538 48 h 2.0 (1.0-4.0) 2.0 (1.0-3.0) 0.3708 - not significant **supplementary analgesia**	**methodological shortcomings** - not reported who generated the allocation sequence, who enrolled participants, and who assigned the participants to their groups - method used to implement the random allocation sequence not reported - not reported whether the sequence was adequately concealed until interventions were assigned - dates defining the period of recruitment and follow-up not reported - adverse events or side-effects in each intervention group not reported **level of evidence**: 1 **authors' conclusion**

reference	participants' characteristics	intervention group/ control group	outcomes	critical appraisal/ conclusion
	age (yrs) 28.0±18.4 26.3±19.6 sex (m/f) 44/15 45/12 height (cm) 169.8±9.7 168.7±10.8 weight (kg) 60.6±10.1 58.8±7.6 duration of surgery (min) 65.4±29.8 68.3±30.9 **patient flow and follow up:** total patient number included: 144 randomised in: group C: 72 group M: 72 excluded: - failed epidural block 4 - early removal of PCEA 11 - uncontactable 11 analysed: group C: 59 group M: 57 follow-up: 1, 12, 24,48 h after surgery and at 3 months	- PCEA: 1 mL bolus, lo 15 min, infusion of 4 mL/h	There was no significant difference in the number of patients who required intramuscular ketorolac (group C, 17 [28.8%]; group M, 15 [26.3%]). **other pain outcome n, (%)** The incidence and severity of CPOP did not differ between the groups (3 months) group C group M no pain 34 (57.6%) 29 (50.9%) pain 25 (42.4%) 28 (49.1%) mild 16 18 moderate 7 9 severe 2 1 - not significant **adverse events** - not reported	"the epidural administration of magnesium from before the induction of anaesthesia to 48 h postop in patients undergoing VATS did not decrease significantly the incidence or severity of CPOP. However, magnesium administration resulted in better pain relief at 12 and 24 h postop compared with the control group"
Mohammad et al. 2015 A randomized double-blind study to evaluate efficacy and safety of epidural magnesium sulphate and clonidine as adjuvants to bupivacaine for postthoracotomy pain relief. Anesth Essays Res. 2015 Jan;9(1):15-20	**inclusion criteria** - age 20–60 yrs - ASA physical status I–III **exclusion criteria** - ASA physical status >IV - BMI >30 kg/m^2 - hypersensitivity to drugs in the study - severe renal, hepatic, or neurologic disease - patients using opioid or systemic analgesic preop **demographic data:** group A group B group C p age (yrs) 32.5±11.39 37.35±13.15 39.75±9.88 0.138 weight (kg) 58.25±7.53 62.35±6.45 62.9±8.90 0.122 height (cm) 165±15 170±15 168±18 0.614 duration of surgery (min) 150.5±2.7 153.2±3.1 155.7±1.3 0.123 ASA (I/II/III) 4/10/6 3/10/7 5/9/6 **patient flow and follow up:** total patient number included: 60 randomised in: group A: 20 group B: 20 group C: 20 excluded: - none reported analysed: 60 follow-up: - every 30 min to 90 min then every 2 h to 24 h	**intervention prior to anaesthesia** - group A (control): 0.25% bupivacaine 8 mL + 0.9% saline 1 mL - group B (Mg): 0.25% bupivacaine 8 mL + 50 mg magnesium sulphate in 1 mL of 0.9% saline - group C (clonidine): 0.25% bupivacaine 8 mL + clonidine 150 µg in 1 mL of 0.9% saline **mode of anaesthesia** - fentanyl **surgical approach** - elective unilateral thoracic surgery **postoperative analgesia** - TEA infusion with 5 mL/h of 0.1% bupivacaine was started 15 min after the bolus dose, and continued during the postoperative period **rescue analgesia** - tramadol 50 mg IV	**postoperative pain: mean cumulative 24 h VAS (±SD) after surgery** - scores were significantly lower in Group C (1.83±0.59) compared with Group A (3.12±0.97) (p=0.001) and Group B (2.86±0.43) (p=0.003) - there was no significant difference between Group A and Group B. **rescue analgesia: mean number of doses ±SD** group A group B group C 3.3±1.6 2.35±0.98 1.750±0.71 - the difference in number of doses was significant between group B (p=0.023) and group C (p=0.017) versus group A group min max mean±SD intergroup comparison ANOVA A 1.000 6.0000 3.3±1.65 A&B p=0.023 p<0.05 B 1.000 4.000 2.35±0.98 A&C p=0.017 C 1.000 3.000 1.75±0.71 B&C p=0.142 **duration of analgesia (min±SD)** - duration of analgesia was significantly prolonged in the group C compare with group A (p=0.001). - there was no statistical significance in duration of analgesia between: - group C and group B (p=0.057) - group B and group A (p=0.167) group min max mean±SD intergroup comparison ANOVA A 30 210 118.5±52.84 A&B p=0.167 0.006 B 30 210 138±24.62 A&C p=0.001	**methodological shortcomings** - not reported who generated the allocation sequence, who enrolled participants, and who assigned the participants to their groups - method used to implement the random allocation sequence not reported - not reported whether the sequence was adequately concealed until interventions were assigned - dates defining the period of recruitment and follow-up not reported - not reported whether or not participants, those administering the interventions, and those assessing the outcomes were aware of group assignment **level of evidence**: 1 **authors' conclusion** "Thoracic epidural analgesia using bupivacaine with clonidine is an efficient therapeutic modality for post-thoracotomy pain. Magnesium as an adjuvant provided postoperative analgesia, decreasing the need for postoperative rescue analgesia and incidence of postoperative shivering without causing sedation"

reference	participants' characteristics	intervention group/ control group	outcomes	critical appraisal/ conclusion
			C 30 210 165±49.15 B&C p=0.0.57 **adverse effects/ events: n** A B C bradycardia 2 1 1 hypotension 2 1 1 nausea/vomiting 3 2 2 sedation 0 0 6* shivering 8 0 4 pruritis 0 2 0 respiratory depression 0 0 0 *p<0.05	