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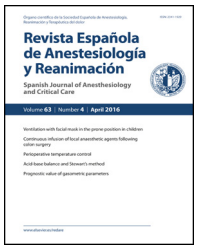

ORIGINAL ARTICLE

Postoperative analgesia with dexmedetomidine in interscalene block. Comparative study☆

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KEYWORDS
Interscalene block;
Adjuvants;
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Clonidine;
Postoperative pain

Abstract
Introduction: Dexmedetomidine prolongs sensory block of ropivacaine. Our objective was to study whether this extension would produce better postoperative pain control compared to that produced by clonidine in patients undergoing arthroscopic shoulder.
Materials and methods: A comparative, longitudinal, controlled, randomised study into 3 groups. Control group I: ropivacaine 0.75% clonidine, group II: 0.75% ropivacaine plus clonidine 1 mg/kg, group III dexmedetomidine: 0.75% ropivacaine plus dexmedetomidine 1 mg/kg. Interscalene block single dose ultrasound-guided. Sensory and motor blockade, pain intensity, sedation level, heart rate, respiratory rate, blood pressure at 6, 12 and 24 h were measured.
Results: Pain intensity at 6 h in groups I and II showed moderate to severe pain, and mild pain in group III. At 12 h the groups I and II showed moderate to severe pain by more than 60% of patients, and in group III only 10%. At 24 h groups I and II showed 20% of patients continued with moderate pain.
Conclusion: The prolonged interscalene block produced by dexmedetomidine provided better postoperative pain control during the first 24 h.

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PALABRAS CLAVE
Bloqueo interescalénico;
Adyuvantes;
Dexmedetomidina;
Clonidina;
Dolor postoperatorio

Analgesia postoperatoria con dexmedetomidina en bloqueo interescalénico. Estudio comparativo

Resumen
Introducción: La dexmedetomidina prolonga el bloqueo sensitivo de la ropivacaína. Nuestro objetivo fue estudiar si esta prolongación produciría un mejor control del dolor postoperatorio comparado con el producido por clonidina en pacientes sometidos a artroscopia de hombro.
Materiales y métodos: Estudio comparativo, longitudinal, controlado, aleatorizado en 3 grupos. Grupo I control: ropivacaína 0,75%; grupo II clonidina: ropivacaína 0,75% más clonidina 1 μg/kg, y grupo III dexmedetomidina: ropivacaína 0,75% más dexmedetomidina 1 μg/kg. Bloqueo interescalénico en dosis única ecoguiado; se midieron el bloqueo sensorial y motor, la intensidad del dolor, el nivel de sedación, la frecuencia cardiaca, la frecuencia respiratoria y la presión arterial a las 6, 12 y 24 h.
Resultados: La intensidad del dolor a las 6 h en los grupos I y II dolor moderado a severo, dolor leve grupo III. A las 12 h, los grupos I y II presentaron dolor moderado a severo en más del 60% de los pacientes y en el grupo III solo el 10%. A las 24 h en el grupo I y II el 20% de los pacientes continuaron con un dolor moderado.
Conclusión: La prolongación del bloqueo interescalénico producido por dexmedetomidina proporcionó mejor control del dolor postoperatorio durante las primeras 24 h.

Introduction

Postoperative pain after arthroscopic shoulder surgery is mainly caused by direct trauma to the shoulder joint muscles or by reflex muscle spasm. It is generally high intensity pain[1] and sometimes requires analgesia similar to that used in gastrectomy or thoracotomy.[2] Interscalene block, which reduces opioid consumption and improve patient well-being and satisfaction,[3,4] is the most widely used postoperative analgesia in this type of surgery.[2] However, duration of analgesia is limited to the type of local anaesthetic used, so the technique is often combined with continuous infusion[5] or with adjuvants such as α2 agonists, which prolong sensory blockade and postoperative analgesic effect.[6–11] The effectiveness of clonidine in peripheral block has been widely studied, but attention has recently turned to dexmedetomidine, a potent, highly selective new generation agonist. Studies comparing dexmedetomidine and clonidine have shown the former to have both sedative and analgesic properties, more predictable pharmacokinetics, and fewer adverse effects. Dexmedetomidine is approximately 8 times more specific for α2 adrenoceptors than clonidine, and has an α2:α1 activity ratio of 1.600:1.[12] It prolongs analgesia by up to 75% by inhibiting hyperpolarization-activated cation channels.[13] In rats, perineural administration in combination with ropivacaine produced no histopathological abnormalities.[14] Dexmedetomidine has been used in both axillary and supraclavicular brachial plexus block, and has been found to reduce onset time while extending the duration of the sensory block, and with it, the duration of postoperative analgesia. The main adverse effect observed is bradycardia.[15,16] Finally, dexmedetomidine in interscalene block has been shown to improve analgesia in the first 18 postoperative hours and reduce postoperative pain.[17] The aim of this study was to investigate whether the extension of sensory blockade achieved with dexmedetomidine plus ropivacaine in interscalene block would improve postoperative pain management compared with clonidine in patients undergoing elective arthroscopic shoulder surgery.

Materials and methods

Following approval from the Clinical Research and Bioethics committees of the National Institute of Rehabilitation (no. 05/14), we conducted a prospective, comparative, longitudinal, controlled study in male and female patients scheduled for elective arthroscopic shoulder surgery. Patients aged from 18 to 65 years, with American Society of Anesthesiologists physical status class I and II and body mass index <35 kg/m^2 were included in the study. Exclusion criteria were: peripheral neuropathies, neck, cervical spine or upper limb abnormalities, hypersensitivity to study drugs, puncture site infection, pregnancy or clinical suspicion of pregnancy, and refusal to undergo the regional anaesthesia technique. Patients in whom the anaesthesia technique was changed for any reason, who required re-intervention in the first 48 h post surgery, or who did not complete the pain assessment were later excluded. Patients were randomised to 3 groups of equal size using random.org software.

Single-shot, ultrasound-guided (Sonosite Micromaxx) interscalene block was administered using an HFL 38/13-6 MHz linear transducer, a 22 G, 50 mm nerve stimulator (Stimuplex* Braun), and a long axis approach with the transducer at an oblique angle. Perineural local anaesthetic was administered as follows: group I (controls) received 0.75% ropivacaine; group II (clonidine) received 0.75% ropivacaine plus 1 μg/kg clonidine (Epiclodina, Pisa Farmacéutica,