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MISCELLANEOUS

Lumbar spinal anesthesia with cervical nociceptive blockade. Critical review of a series of 1,330 procedures☆

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KEYWORDS
Spinal anesthesia;
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Abstract
Background and objectives: The manufacture of minimally traumatic needles and synthesis of pharmacological adjuncts with safe and effective action on inhibitory and neuromodulatory synapses distributed along the nociceptive pathways were crucial for a new expansion phase of spinal anesthesia. The objectives of this paper are present our clinical experience with 1330 lumbar spinal anesthesia performed with purposeful nociceptive blockade of the thoracic and cervical spinal nerves corresponding to dermatomes C4 or C3; warn about the method pathophysiological risks, and emphasize preventive standards for the safe application of the technique.
Content: Review of the historical background and anatomical spinal anesthesia with cervical levels of analgesia. Description of the technique used in our institution; population anesthetized; and surgery performed with the described method. Critical exposition of the physiological, pathophysiological, and clinical effects occurred and registered during anesthesia-surgery and postoperative period.
Conclusion: Spinal anesthesia with nociceptive blockade to dermatome C4, or C3, is an effective option for surgery on somatic structures distal to the metamer of the third cervical spinal nerve, lasting no more than four or five hours. The method safety depends on the unrestricted respect for the essential rules of proper anesthesia.

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PALAVRAS-CHAVE
Raquianestesia;
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Intercorrências;
Prevenção;
Tratamento

Raquianestesia lombar com bloqueio nociceptivo cervical. Revisão crítica de uma serie de 1.330 procedimentos

Resumo
Justificativa e objetivos: A fabricação de agulhas minimamente traumáticas e a síntese de coadjuvantes farmacológicos com ação efetiva e segura nas sinapses inibitórias e neuromoduladoras distribuídas ao longo das vias nociceptivas foram determinantes para uma nova fase de expansão da anestesia subaracnoidea. Os objetivos deste artigo são: apresentar a experiência clínica dos autores com a realização de 1.330 Raquianestesias lombares com bloqueio nociceptivo proposital dos nervos espinhais torácicos e cervicais até os dermátomos correspondentes a C4 ou C3; alertar sobre os riscos fisiopatológicos do método e enfatizar as normas preventivas para a realização da técnica com segurança.
Conteúdo: Revisão dos fundamentos históricos e anatomofuncionais da anestesia subaracnoidea com níveis cervicais de analgesia. Descrição da técnica utilizada em nossa instituição; da população anestesiada e das cirurgias realizadas com o método descrito. Exposição crítica dos efeitos fisiológicos, clínicos e fisiopatológicos ocorridos e registrados durante o ato anestésico-cirúrgico e no período pós-operatório.
Conclusão: A Raquianestesia com bloqueio nociceptivo até o dermátomo de C4, ou de C3 é uma opção efetiva para cirurgias sobre estruturas somáticas distais ao metâmero do terceiro nervo espinhal cervical com duração não superior a 4 ou 5 horas. A segurança do método depende do respeito irrestrito às regras essenciais da correta prática anestésica.

Introduction

We started the extensive trial of spinal anesthesia (SA) for abdominoplasty and liposuction in 2004. When we find that often the breast region, innervated by intercostal nerves from T2 to T7, long lateral thoracic nerve derivative of the brachial plexus, and lower cervical plexus branches, also had surgical anesthesia, it encouraged us to use the method for mammoplasty and since then SA has become the technique of choice of our Service for such procedures.[1,2] In 2007, we developed a Specific Anesthetic Form (SAF-SA) in which we registered the SA performed for cosmetic and/or abdominal and thoracic repair procedures and the main intraoperative and postoperative events.[3–9] This article is the result of the SAF retrospective review of 1330 consecutive SA performed between December 2007 and December 2013.

High spinal anesthesia is not new in anesthesiology literature. Jonnesco in 1911, Le Filiartre in 1921, and H Koster in 1928 left important historical legacies on the technique.[10]

By the 70s of last century, Reynolds, Hudges, Bonica, Melzack, and Wells, among others, performed the pioneering studies of neuromodulation of pain in spinal cord segments, suprasegmental structures of the brain stem and adjacent subcortical areas. These synapses' inhibitory neurotransmitters and modulators were identified, and the pharmaceutical industry synthesized exogenous agents able to mimic these actions.[11–14] Sufentanil and clonidine are listed as two of the adjuvant drugs most experimentally and clinically studied by the subarachnoid route. Extensive scientific documentation confirms and supports the safety of the opioid and alpha-2 adrenergic association to 0.5% hyperbaric bupivacaine improving the SA quality, duration, and residual analgesia.[15–32]

Method

The study protocol was approved by the Research Ethics Committee of Hospital Santa Casa de Misericórdia, Santos, SP.

Patient selection

In this series of procedures 1330 subjects were enrolled, with physical status ASA I or II, between 17 and 72 years old, scheduled for plastic surgery in upper areas of the body, with an expected maximum duration of five hours, without contraindication for SA and who, after clarification on the technique, record, and review of data collected for this study, give their written consent.

Technique description

Perform a complete check of all anesthetic material in the operating room (OR).

Dilute and label 50 mg of ephedrine in 10 mL of saline solution (SS) or distilled water (DW) and have atropine, metaraminol, and adrenaline ampoules for immediate opening if required.

Make sure that the operating table is able to offer a 30° head-down tilt position and securely attach the mat to prevent it from sliding.

Check all sterile and disposable materials for spinal anesthesia, including 27G Whitacre needle and ampoules in sterile cases of 0.5% hyperbaric bupivacaine, sufentanil 5 $\mu g\,mL^{-1}$, and clonidine 150 μg.[33,34]