

COMBINED ANESTHESIA TECHNIQUE - SPINAL AND EPIDURAL ANESTHESIA THROUGH SINGLE SPINAL PUNCTURE NEEDLE

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ABSTRACT. Anaesthesia management combined spinal anaesthesia and spinal needle peridural one, is to perform an anaesthetic techniques predictable effect faster, effective anaesthesia, economic and postoperative analgesia. This technique involves performing two anaesthetic techniques together with a single spinal needle. The search was performed between 1998-2002 on 2174 patients: both genders, age between 18-88, surgical diseases in lower abdominal part + associated comorbidities, diseases of lower limbs. Bimodal action on each component of anaesthesia, achieved a reduction in dose of local anaesthetic, with a single administration and the cumulative effect of a single spinal 20GX3 needle 22GX3 ½ or ½. By injecting local anaesthetic substance, is made a sensory block, motor and sympathetic intensity and duration characteristics of each substance and directly proportional to the volume and concentration used. Study this technique is practiced in the Municipal Clinical Hospital Clinic ATI Arad since 1998. The advantages of using this technique are: anaesthesia to install quickly, better analgesia and relaxation, using a single needle puncture and require no special materials, enhances both anaesthesia and a longer duration of action, continue and postoperative analgesia, some patients do not require analgesia and the others are enough minor analgesics (1-2) to relieve pain and doses of anaesthetic are small.

Keywords: spinal anaesthesia, epidural anaesthesia, combined anaesthesia technique

INTRODUCTION

Combined conduction anesthesia: spinal subarachnoid anesthesia and epidural retrograde anesthesia (CSP) through single spinal puncture needle goals to: perform a quick anesthetic technique; efficient anesthesia; economic procedure; postoperative analgesia; lower incidence of postoperative headaches; decrease in doses of local anesthetics; single administration with cumulative effects; achievement of sensitive/motor/sympathetic block with intensity and lasting period specific for each substance, also proportional with the amount and concentration. CSP has been performed in our hospital from 1998 till now (Ciobanu M. and Cristea I., 2003).

ANAESTHESIA TECHNIQUE

It is performed in 2 phases:

Phase 1: spinal subarachnoid anesthesia - sitting position or lateral decubitus

- Appropriate identification of number and level of metameres to be blocked, with respect to spinal center of nociception for a specific body and for somatic pain.

- Puncture of subarachnoid space with a spinal needle: 22GA 1,50 IN(0,7x90mm) or 20GA 3,50 IN (0,9x90mm), at T12 -L2 level (with respect to spinal center of the involved organs)

- 10 ml syringe + local anesthetic
- Intraspinal anesthesia is performed

Phase 2

Proceeding to epidural retrograde anesthesia using the same spinal needle, attached to 10 ml syringe.

After injection of local anesthetic in the intratecal space, the needle has to be retreated about 8-12 mm in the epidural space.

Reaching of epidural space (under zero pressure) is achieved by 3-4 forward/backward movements with the piston of syringe (piston is aspirated by the vacuum in syringe).

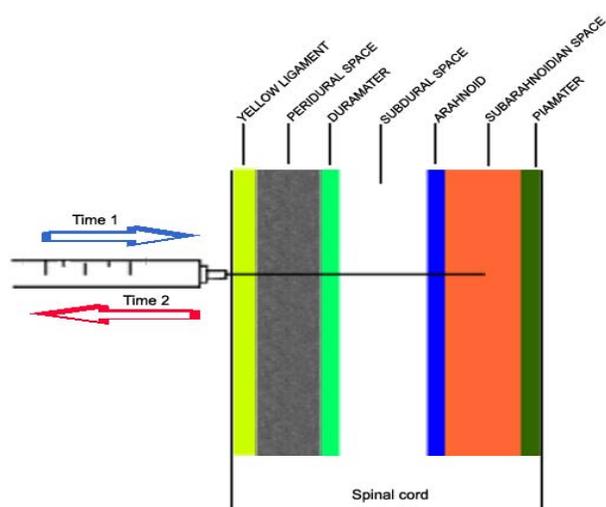


Fig. 1,2 Checking for epidural space

We detach the syringe from the needle, the absence of cerebrospinal liquid leak is checked, the syringe for epidural anesthesia is then attached.

When retreating spinal needle, left hand has to be in close contact with patients skin.

We can increase the level of anesthesia with 1-2 metameres by changing to upside the position of cut-end of needle, after injection of $\frac{1}{2}$ from local anesthetic in epidural space.



MATERIALS AND METHODS

The search was performed between 1998-2002 on 2174 patients: both genders, age between 18-88 years, surgical diseases in lower abdominal part and associated comorbidities, diseases of lower limbs.

Group I - 2062 patients, risk ASA II and III:

- conventional abdominal surgery
- laparoscopic surgery (laparoscopic cholecystectomies: 67 cases who refused general anaesthesia)
- urologic procedures

Administration: combined retrograde anesthesia: spinal subarachnoid anesthesia with Bupivacaine 0.5% amount of 0.3 mg/kg b.w. maximum 20mg and epidural anaesthesia with Bupivacaine 0.25%, 1ml-1.5ml/metamere, dose of 16-20ml; adrenaline

1:200.000 (5 μ g/ml); Petidine 0.5-0.8mg/kg b.w. (in elderly and in patients with many comorbid conditions 0.7-1 ml/metamere).

Group II - 112 patients, risk ASA II and III: both genders, age between 18-88 years, surgical diseases in lower abdominal part and associated comorbidities, diseases of lower limbs, urologic procedures.

Administration: combined conduction anaesthesia (CSP) with 4% Lidocaine Chlorhydrat in dose of 1-1.2mg/kg b.w. for spinal anaesthesia and 0.5% Lidocaine Chlorhydrat in dose of 1-1.5ml/metamere (16-20ml), with adrenaline 1:200.000 and petidine 0.5-0.8mg/kg b.w., for epidural anaesthesia.

Prehydration with Natrium Chloride 9‰ or Ringer solution 750-1000ml.

Antimastocytar preanaesthesia (Ketotifen 1mg).

Used Criteria: quality of analgesia using analogue pain scale VAPS (0-10); Motor block using Bromage score (1-4); side effects; complications.

Anaesthesia CSP with Lidocaine:

- short lasting period of block
- very quick and easy recovery
- low systemic toxicity
- short surgical procedures (Acalovschi I., 1988)

The quality of analgesia VAPS (0-10, analogue scale of pain)

- 1-3: 80% CSP (both groups), at 10-60 minutes
- 3-6: 18% CSP Bupivacaine, after 30 minutes
- 3-6: 16.9% CSP Lidocaine after 30 minutes

Motor block: Bromage score (1-4)

Time to onset CSP Bupivacaine 10-15 minutes

Time to onset CSP Lidocaine 5-10 minutes

There were excluded: 7 patients (0.3%) CSP Bupivacaine and 2 patients (1.7%) CSP Lidocaine

Technique failure (1.4% for bupivacaine anesthesia and 1.2% for lidocaine anesthesia):

- improper checking of spinal spaces
- patients with major deformations of spine
- troubled patients
- blood vessel puncture (Bejan D., Marinesc S., 2002; Axelsson K.H. et al., 1982).

DISCUSSIONS

• Technique of CSP is simple and quick, side effects can be treated like for any conduction anesthesia.

• Fast onset of sensitive/motor block is due to spinal anesthesia in the first phase of CSP, then epidural anesthesia will be effective after 20/30 minutes.

• The 2 anesthetic procedures gathers their potencies, so the doses of local anesthetic substances will become lower.

• We recommend the use of a single 22GA 1,50 IN needle, different from the needle-in-needle technique (spinal +Tuohy needle).

• This procedure reach the goals of good anesthesia: sensitive/motor/sympathetic block, muscular palsy.

• Combined anesthesia CSP extends faster cranially, but in 20/30 minutes touches the maximum surface of epidural space.

CONCLUSIONS

The use of a single spinal needle for performing retrograde combined anesthesia (spinal and epidural) simplifies the anesthetic technique and shortens the time for execution.

Sensitive and motor block are achieved faster, in the first 2/10 minutes from beginning: motor block is weaker for Bupivacaine, but stronger analgesia is obvious.

Analgesia and muscular palsy were good at least in 80% of patients, the rest of 20% being referred for completion with general anesthesia.

In those cases with insufficient anesthesia, we think it is possible that anesthetic liquid to spread on minimum resistance pathways without a uniform distribution, or spinal needle was improper placed.

Anesthesia CSP extends the time of spinal block and of adequate sensitive block.

Using a single spinal needle, we have not the risk of penetrating Dura mater with a Tuohy needle.

Risk for leaking of CRL through Dura mater is low, because of the small post-puncture hole and because of increased pressure in epidural space, where the local anesthetic was entered.

Postoperative headaches are at minimum level (1%).

The necessity for postoperative analgesic medication was lower, even none for some patients.

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