STRATEGIES TO AVOID OPIOIDS AND SPARE THE DIAPHRAGM IN DAY-CASE SHOULDER SURGERY: CASE STUDIES

Bruno Lima¹, Pedro Moreira¹, Carolina Martins², Paulo Fragoso¹

1 – Anaesthesiology Department, Hospital de Braga. Braga, Portugal

2 – Anaesthesiology Department. Centro Hospitalar de Lisboa Ocidental. Lisboa, Portugal

INTRODUCTION

Shoulder surgery is associated with significant postoperative pain. Interscalene block (ISB) remains the cornerstone in shoulder surgery, but it may result in phrenic nerve block in up to 100% of the cases.

Opioid use is limited by its side-effects and it is best avoided in the outpatient setting. This prompts for different approaches to the anaesthetic technique.

Opioid-free anaesthesia combined with diaphragm-sparing nerve blocks can minimize complications providing effective analgesia, enhanced recovery and a better outcome.

Our purpose was to evaluate the efficacy and feasibility of an anaesthetic protocol that would meet these requirements.

CASE STUDIES

-Five patients, 34 to 78 years-old, ASA II

-Surgical procedure: shoulder arthroscopy - rotator cuff repair surgery

-Anaesthetic technique: Superficial cervical plexus block (5mL), low-volume “extrafascial” interscalenic block, lateral to C5-C6 (5mL) and posterior and lateral cords block at infraclavicular level (5 + 5 mL), with a mixture of 0,5% Lidocaine, 0,5% Ropivacaine and Dexamethasone 4mg, followed by LMA ProSeal® general anaesthesia, induction with propofol and maintenance with Sevoflurane/O₂/air mixture.

Figure 1: A- Ultrasound guided “extrafascial” interscalenic block, lateral to C5-C6; B- Ultrasound guided posterior and lateral cords block at infraclavicular level

AAx- Axillary artery ASM- Anterior scalene muscle CA- Carotid artery C5, C6- cervical vertebrae 5 and 6 IJV- internal jugular vein M- medial MSM- middle scalene muscle MC- medial cord LC- lateral cord PC- posterior cord PN- Phrenic nerve SCM- sternocleidomastoid muscle L- lateral LA- Local anesthetic

All patients were monitored according to ASA standards plus monitoring bispectral index, BIS® (to a target 40 to 60) and cerebral oxygenation monitoring, INVOS® (to a target rSO₂ variation < 20% of baseline)

Figure 2: One of the patient's monitoring

Positioning: beach chair positioning

Intra-operative: all patients were hemodynamically stable with optimal surgical conditions. Multimodal analgesia was provided with intravenous paracetamol and NSAID's

RESULTS

Postoperative: All patients reported mild to no pain (VAS 0-3), no nausea or vomiting. After recovery, at PACU, diaphragmatic function was evaluated with ultrasound. No phrenic block was registered.

Figure 3: Ultrasound evaluation of diaphragmatic function

FOLLOW-UP

First post-op day

All patients were discharged the day after, with no need for rescue analgesia, except one patient that needed *per os* paracetamol plus tramadol for moderate pain.

Consultation by a physiatrician was provided before discharge.

24 hours phone-call

4 patients answered and reported mild or no pain (VAS 0 – 3)

8th day post-op

None of the patients needed rescue analgesia. No other complaints were registered.

DISCUSSION AND CONCLUSION

The anaesthetic protocol employed in these cases allowed adequate pain control with no opioid side-effects, providing adequate surgical conditions and preserving brain perfusion, contributing to overall patient satisfaction and early recovery

Diaphragm-sparing nerve blocks with adequate anaesthetic coverage helped to minimize complications, maintaining respiratory performance. This proved to be a valid strategy in outpatient setting. Nevertheless, further studies, enrolling more patients are necessary to establish a definitive protocol.

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