Serratus Anterior Plane Block (SAPB) for Long-Lasting Analgesia and Improvement of Diaphragm Function in Multiple Rib Fractures (MRF): a Pivotal Study

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Introduction

Approximately 21% of patients admitted to trauma centres with chest trauma present MRF⁽¹⁾. Severe pain associated can lead to hypoventilation and respiratory complications in 31% of cases^(2,3). Epidural and multimodal analgesia versus opioids are recommended in pain management⁽²⁾. Opioids present significant side effects. We hypothesized that SAPB^(4,5) could provide safe and effective analgesia, extended by addition of dexamethasone to local anaesthetic solution, and reduce respiratory complications, enhancing recovery of a better mechanical lung function.

Methods

4 patients (BMI 30 ± 3 , age 60 ± 18) admitted to ED for polytrauma with lateral and posterior MRF (6 ± 2) and severe pain (NRS > 5), impairing maximal inspiration and coughing, were treated with multimodal analgesia + SAPB.

We injected 0.25%-levobupivacaine 30 ml and dexamethasone (8mg) towards the serratus plane on the midaxillary line at 5th rib level with US guide (Picture 1).

We registered RR and NRS at rest (NRS_r), during maximal inspiration (NRS_i) and coughing (NRS_c) before SAPB (T0), after 15 minutes (T1) and after 4h (T2). At T0 and T2 we performed diaphragmatic ultrasound (diaphragm thickening ratio%, DTR_r and DTR_i).

Picture 1

Graph 1

Graph 2

Conclusions

Both clinical and instrumental patterns suggest that SAPB is safe and provides effective opioid-sparing analgesia in MRF. It improves diaphragm function and could reduce respiratory complications.

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