



Letter to the Editor

Emergency Medicine Ultrasound Guided Regional Nerve Block; An Initiative in Improving Acute Pain Management in Emergency Department Hospital Selayang

Nabil Muhammad bin Haji Al Kuddoos*, Gurjeet Singh a/l Harvendhar Singh, Muhamad Syis bin Zulkipli

Emergency Medical Department, Hospital Selayang, Selayang-kepong, Batu Caves, Selangor 68100, Malaysia

*Corresponding Author's E-mail: nabu07@hotmail.com

Introduction

Pain management in the Emergency Department is essential in management of trauma cases as well as improvements in patient satisfaction (Sepahvand *et al.*, 2019). Indications of nerve blocks in the emergency department are numerous however the focus lies on facilitating emergency interventions (eg CMR, wound irrigation) and for therapeutic interventions (eg. hypoventilation in a flail chest) (Malk *et al.*, 2022).

Methodology

Indications for nerve blocks in the Emergency Department Hospital Selayang

1. To facilitate emergency interventions (CMR, Wound irrigation, wound refashioning)
2. For therapeutic interventions (hypoventilation due to flail chest).
3. To alleviate pain when conventional analgesia does not work.
4. To reduce the dose of opioids and avoid its complications (Abdelhamid, ElHawary & Turner, 2020)
5. To facilitate ventilatory interventions

Nerve Blocks in early phase of injuries

- a) Hip and lower extremity injuries
- b) Upper extremity and shoulder injuries
- c) Rib fractures
- d) Head and face injuries

Factors in Emergency Nerve Blocks

- 1) Patient factors
 - a) screen patients for co-morbid
- 2) Block factors
 - a) Appropriate RA technique
 - i) USS guided
 - ii) Aspirate before injection
 - iii) Fractional design with time intervals of 30 sec
- 3) LA and method factors

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- a) Appropriate LA and drug doses
 - i) choose less toxic cardio and LA drugs
 - ii) calculate the maximum toxic dose
 - iii) use the minimum LA dose
- 4) Non-technical factors
 - a) Set up ergonomics
 - i) Resus trolley
 - ii) Vital signs monitoring
 - iii) Ergonomics
 - iv) Communication between teams



Figure 1: Showing Ergonomics in a Nerve Block

Emergency Nerve Block Kit of Emergency Department Hospital Selayang

Content:

- 1) Giving set
- 2) Syringe
- 3) Large bore needle
- 4) Bottle holder
- 5) Protocol/ checklist

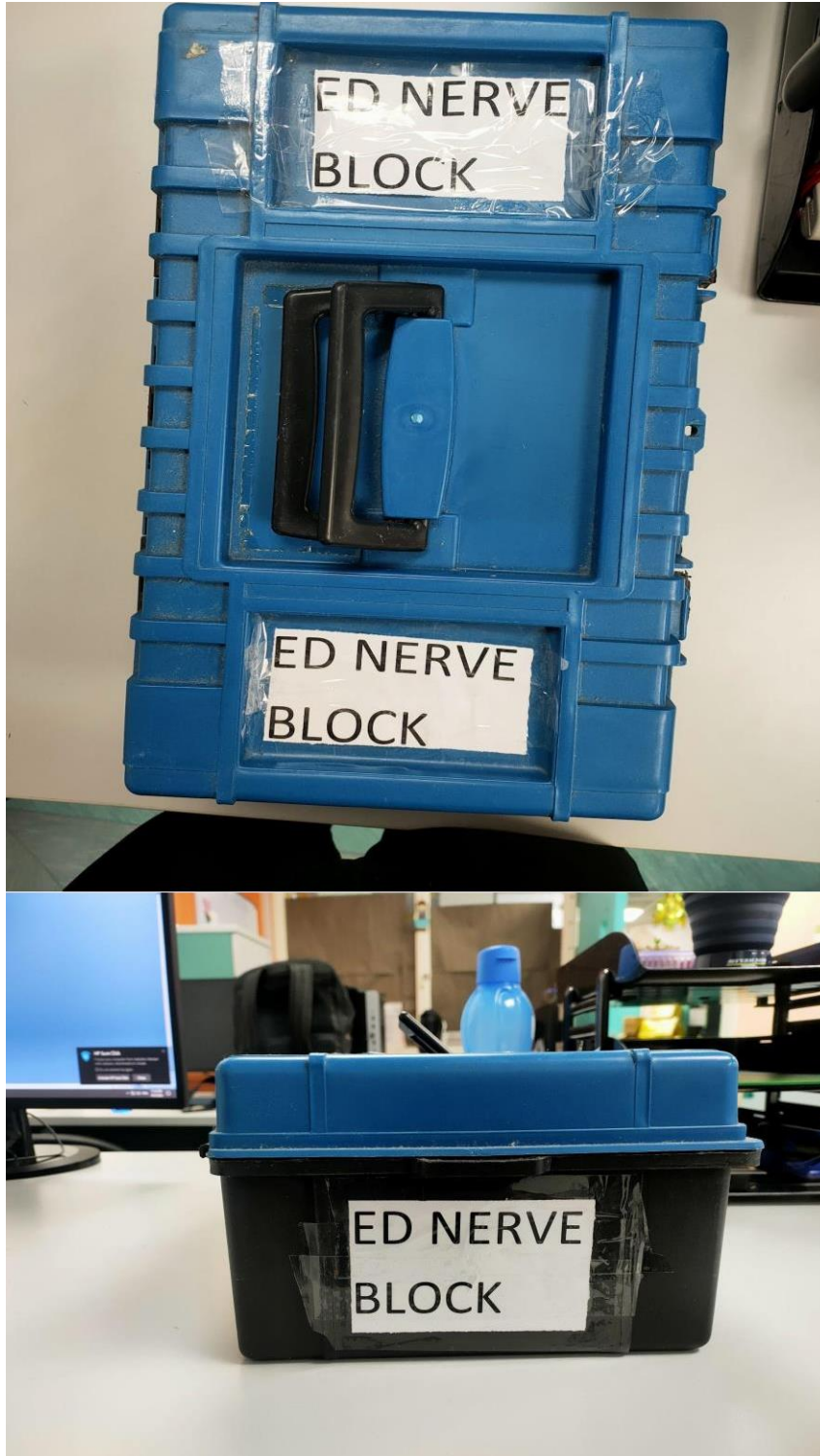




Figure 2a, 2b, 2c: Showing the ED Nerve Block Kit

Performing the Nerve Blocks in Emergency Department Hospital Selayang

- 1) Use an Ultrasound (ultrasound guided techniques reduces the volume of LA infiltrated)
- 2) Know the anatomy of the block
- 3) Slide, tilt, rock the ultrasound to identify the right location
- 4) Little pressure on the transducer to visualize the veins as landmark
- 5) Place the needle tip under ultrasound guidance immediately adjacent to the nerves
- 6) Fan technique to increase the success rate
- 7) Always assure absence of resistance during injection
- 8) Intrafascicular injection risks
- 9) Use out of plane or in plane techniques
- 10) Ensure micromovements, hydro separation on ultrasound, splitting of the fascial planes, or blood on aspiration before injecting the LA



Figure 3a: Performance of a Nerve Block



Figure 3b: Performance of a Supraclavicular Block



Figure 3c: Performance of a Fascia iliaca Block

Performing the Nerve Blocks in Emergency Department Hospital Selayang

Blocks performed in the ED will include but not limited to

- 1) Upper limb blocks
 - Supraclavicular block
- 2) Truncal blocks
 - Serratus block
- 3) Lower limb blocks
 - Fascia iliaca block
 - Femoral block

Discussion

Complications recognition and management

- 1) Hyperdynamic
- 2) Hypotension
- 3) Bradycardia
- 4) Conduction block
- 5) Ventricular arrhythmia (Reisener *et al.*, 2020)

Other complications:

- 1) Pneumothorax
- 2) Diaphragmatic hemiparesis
- 3) Vessel and nerve injuries
- 4) Horner syndrome
- 5) LA toxicity

Management of toxicities:

- 1) Stop injecting the LA
- 2) Call for help and get the ED Nerve block kit
- 3) Maintain / secure airway
- 4) Confirm and establish iv access
- 5) Terminate and suppress seizures by benzodiazepines
- 6) Consider iv lipid emulsion
- 7) Alert the ICU/primary team

Lipid emulsion therapy:

- 1) 20 % lipid emulsion therapy
- 2) Bolus 1.5ml/kg (100mls) over 2-3 min
- 3) Then start infusion of 0.25ml/kg/min for 10 min

If toxicity persist,

- 4) Repeat bolus
- 5) Double the infusion rate to 0.5ml/kg/min for 10 min

Conclusion

Administrative Considerations

- 1) Logistics and governance

- a) Need
- b) Procedures
- c) Resources
- d) Pathways and guidelines
- e) Championed by trained personals with accredited courses

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Disclosure

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