

Suspected Local Anesthetic Systemic Toxicity Following Erector Spinae Plane Block in Advanced Duchenne Muscular Dystrophy

ASRA CASE REPORT

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BACKGROUND

- LAST is rare but potentially life-threatening.
- DMD has not been shown to independently increase LAST susceptibility.
- Multisystem disease may alter pharmacokinetics and physiologic reserve.

CASE REPORT

- 40-year-old, 45-kg patient with advanced DMD.
- Cirrhosis with ascites; ESRD on home dialysis; seizure disorder; thrombocytopenia.
- Scoliosis with spinal instrumentation; chronic ventilator dependence via tracheostomy.
- Pneumonia with empyema requiring chest tube; severe pain despite opioids.
- Thoracic epidural considered technically prohibitive → ultrasound-guided left ESP block.
- 5 mL sterile water hydrodissection + 40 mL 0.25% bupivacaine (100 mg; 2.2 mg/kg).
- Incremental injection with aspiration every 1–5 mL; all negative for blood.

DISCUSSION

- Neurologic symptoms began within minutes of block completion: staring, lip smacking, tongue automatisms, confusion, desaturation, and seizure-like activity.
- Bag-mask ventilation and IV lipid emulsion were promptly administered; symptoms resolved without cardiovascular collapse.
- LAST was favored by the close temporal relationship, although inadvertent intravascular injection could not be excluded.

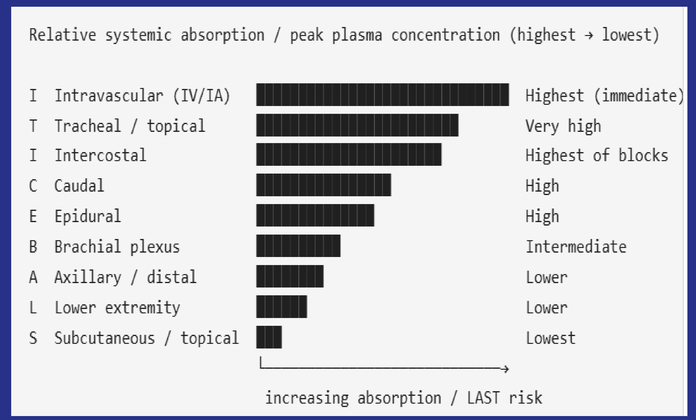
Main finding:

Suspected LAST occurred despite a conventional, sub-toxic bupivacaine dose.

Why it may have happened

Paraspinal vascularity → rapid absorption
Hypoalbuminemia → greater unbound fraction
Cirrhosis → potentially reduced metabolism

Agent	Max dose WITHOUT epinephrine	Max dose WITH epinephrine
Esters		
Procaine	7 mg/kg	10 mg/kg
Chloroprocaine	15 mg/kg	20 mg/kg
Tetracaine	1 mg/kg	1.5 mg/kg
Amides		
Lidocaine	4–4.5 mg/kg (max 300 mg)	7 mg/kg (max 500 mg)
Mepivacaine	5 mg/kg	7 mg/kg
Bupivacaine	2.5 mg/kg	3 mg/kg
Levobupivacaine*	2 mg/kg	3 mg/kg
Ropivacaine	2 mg/kg	3 mg/kg



Link for Full Abstract

KEY TAKEAWAYS

- DMD itself has not been established as an independent LAST risk factor.
- Conventional dose thresholds may not capture risk in medically complex patients.
- Negative aspiration does not eliminate risk of systemic absorption.
- Consider protein binding, hepatic function, and reduced physiologic reserve.
- Individualize dose; inject incrementally; monitor closely; have lipid emulsion immediately available.

ALTERNATIVE ETIOLOGIES

- Seizure disorder
- Opioid administration
- Critical illness / ESRD metabolic abnormalities

TAKE-HOME

Treat compatible neurologic symptoms as LAST until proven otherwise.