



Risk of Local Anesthetic Systemic Toxicity in a Patient with Pierre Robin Syndrome

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Abstract

Local anesthetic systemic toxicity (LAST) is a life-threatening adverse event that may occur after the administration of local anesthetic drugs through a variety of routes. The underlying mechanisms for LAST are multifactorial. There are patient-dependent and patient-independent risk factors. We present our experience in the management of a patient with Pierre Robin Syndrome undergoing an orthopedic procedure on the upper extremity.

Introduction

Caring for patients with Pierre-Robin Syndrome poses unique anesthetic considerations for the anesthesiologist.

- Pierre Robin Syndrome presents with craniofacial abnormalities such as:
 - Hypoplastic mandible
 - Glossoptosis
 - U shaped cleft palate
 - Micrognathia
 - Airway obstruction

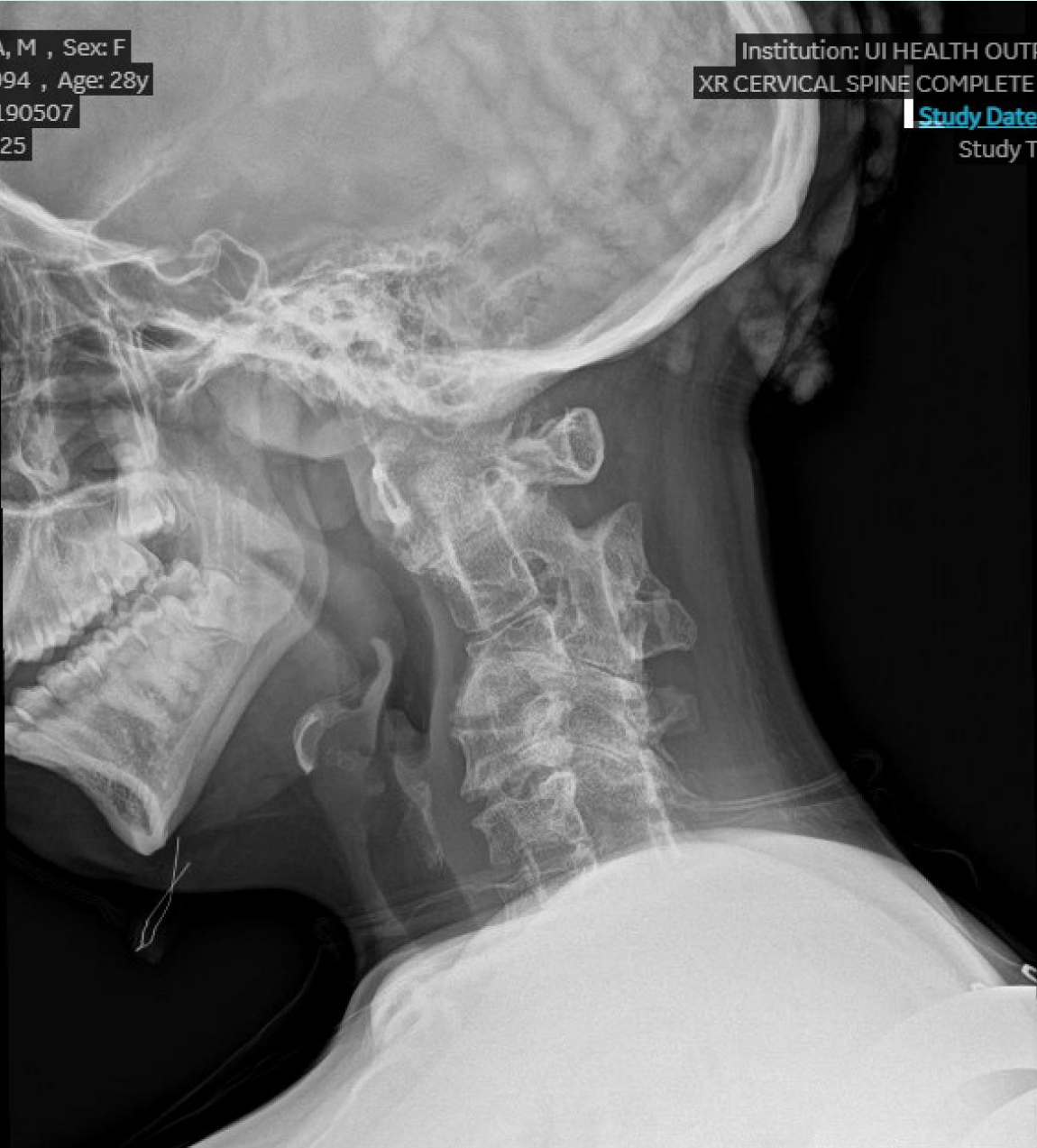
The findings in PRS may be part of a syndrome or may be isolated.

Patient Presentation

- 29-year-old female presented for cubital tunnel release
- PMHx:
- Stickler Syndrome
 - Pierre Robin sequence
 - Scoliosis
 - Asthma
 - Bipolar disorder
- 50 kg, visibly deconditioned, wheelchair bound, history of difficult mask ventilation and intubation requiring FOI during previous surgeries
- Unable to lie flat due to micrognathia and glossoptosis.
 - Unable to lie prone due to scoliosis and lack of cervical mobility
- Intraoperative Plan:
- GETA w/ Awake FOI
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- Supraclavicular & Intercostobrachial nerve block for post-op pain
 - 25 mL of 0.25% bupivacaine
 - Preparation in pre-op area:
 - 5 mL nebulizer 4% lidocaine
 - 5 gm 5% lidocaine paste w/ tongue depressor
 - 4 mL 4% lidocaine to spray cords using LTA through nasal trumpet placed in oral cavity
- Delayed turn over
- Orthopedic surgery staggered case, delayed start time after anesthetizing airway
- Return of gag reflex and sensation in oral cavity of patient
- Given size, weight, low lean muscle mass and inability to obtain lidocaine plasma level, the patient would be at high risk for LAST if her airway were re-topicalized
- Final decision: postpone case to avoid risk of LAST

Discussion

- Caring for patients with craniofacial dysmorphology poses unique airway challenges
- Underlying mechanism of LAST is multifactorial:
 - Pt dependent risk factors: extremes of age, coexisting systemic disease, low lean muscle mass, patient body habitus
 - Pt independent risk factors: Large amounts of local anesthetics for airway topicalization, alternative amide local anesthetic for regional technique, re-topicalization of airway, inability to assess lidocaine plasma level
- It is essential to use minimum safe dose of local anesthetic required for awake tracheal intubation
- Peak plasma concentrations can vary between individuals and timing of peak levels varies with route of absorption



Discussion

Esters	Max Dose (mg/kg)	Duration (h)
Chloroprocaine	12	0.5 – 1
Procaine	12	0.5 – 1
Cocaine	3	0.5 – 1
Tetracaine	3	1.5 – 6

Amides	Max Dose (mg/kg)	Duration (h)
Lidocaine	4.5/(7 with epi)	0.75 – 1.5
Mepivacaine	4.5/(7 with epi)	1 – 2
Prilocaine	8	0.5 – 1
Bupivacaine	3	1.5 – 8
Ropivacaine	3	1.5 – 8

Conclusion

If the patient is optimized and the anesthesiologist is well prepared, patients can be safely cared for. A conversation with the patient and proceduralist is warranted with shared decision making regarding the anesthetic plan on a case by case basis.

References

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