L.A.S.T. Stop Ambulatory Care:

Local Anesthetic Systemic Toxicity

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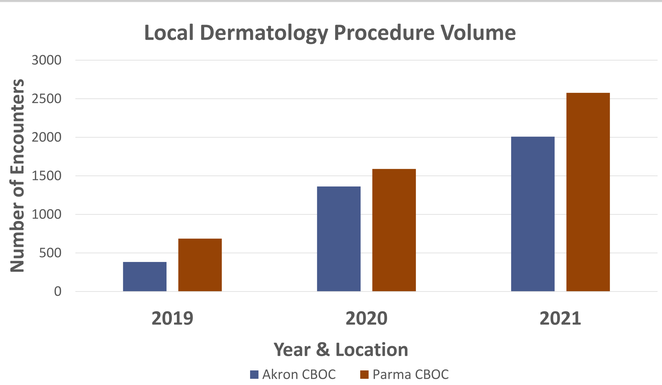
Background

There was lack of policy, protocol and education surrounding L.A.S.T syndrome in ambulatory care. L.A.S.T. syndrome or Local Anesthetic Systemic Toxicity is a serious life-threatening condition that can occur in any setting following the administration of local anesthesia.

Procedures, particularly in dermatology, has increased significantly in ambulatory care clinics.

Providing comfort during these procedures often requires the patient to receive local anesthesia via injection.

Providers within the ambulatory clinics can use a substantial amount of local during certain procedures. With this practice becoming more common, L.A.S.T syndrome was researched and questioned.



Risk Factors

Frailty
- Age Extremes
- Low Muscle Mass
- Female - Pregnancy
- Malnourishment

Cardiac Disease
- Low Ejection Fraction
- CHF
- Arrhythmias
- Ischemia

Metabolic Disease
- Diabetes
- Acidosis
- Hepatic Dysfunction

Chronic Conditions
- Central Nervous System Disease
- Renal Disease
- Liver Disease
- Medications inhibiting Na Channels

Evidence Based Practice

Identify risk factors for LAST Syndrome

History Recommendation:

✓ Allergies, Ht./Wt./BMI, Co-Morbidities/Medical History, Baseline Vital Signs and Neurological Status, Current Medications

Determine the maximum allowable dose of local anesthetic

Local Recommendation:

✓ Use lowest effective dose for desired effect, Inject the local incrementally, Aspirate before each injection, Track total amount of local

Determine parameters to monitor

Vital Sign Recommendation:

✓ Heart Rate, Blood Pressure, Pulse Oximetry, Level of Consciousness, Pain Score

Frequency Recommendation:

✓ Baseline, After Local Administration, Every 5-15 minutes, Post Procedure

LAST Signs & Symptoms

EARLY INDICATORS	LATE INDICATORS
Perioral Paresthesia	Facial paresthesia
Metallic Taste and Disarthria	Delirium and Syncope
Auditory Disturbances	Seizure and Coma
Diplopia	Nervous System Depression
Elevated BP with Tachycardia	Respiratory Arrest
Decreased BP with Bradycardia	Cardiac Arrest and Asystole
Agitation and Dizziness	
Shivering and Tremors	

Intervention

STOP Administration of Local Anesthetic

Call for Help
Activate Emergency Response

Maintain Airway
Ventilate with 100% Oxygen
Follow BLS/ACLS Protocols
LAST Rescue Kit

Nursing Implications

L.A.S.T. syndrome or Local Anesthetic Systemic Toxicity is a serious life-threatening condition that can occur in any setting following the administration of local anesthesia.

While this condition is rare the impact to the patient can be detrimental and the appropriate training and resources need to be available at any facility using local anesthesia during procedures (AORN, 2021).

Having proper policy and protocols in place to rapidly recognize and provide treatment to improves the patient's chance of survival (AORN, 2021).

Evidence suggests that symptoms may occur as quickly as one minute or less if direct injection into the vascular system occurs, and up to five minutes after injection when intermittent and in the lower extremities (AORN, 2021).

The ASRA (2020) algorithm is a tool that should be used to provide proper treatment and transfer to the next level of care.

Prevention Strategies & Recommendations

- During pre-procedure, discuss dosing and utilization of lowest dose to achieve desired outcome
- Aspirate before each incremental injection
- Awareness of supplemental effects
- Access to airway rescue, EKG/cardiac monitor, BP device, and pulse oximetry

LAST KIT

- IV supplies including tubing
- Syringes
- 20% lipid emulsion
- ASRA checklist

References

AORN. 2021. *Local Anesthesia.* Retrieved from: Local Anesthesia | AORN eGuidelines+ (aornguidelines.org)

ASRA. 2020. *Checklist for Treatment of Local Anesthetic Systemic Toxicity.* Retrieved from: Checklist for Treatment of Local Anesthetic Systemic Toxicity (asra.com)

The American Academy of Dermatology, Inc. Taskforce. (2016). Guidelines for use of local anesthesia in office based dermatologic surgery. *Journal of the American Academy of Dermatology, 74*(6), 1201-1319.