Local anaesthetic toxicity

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See also: ***Nerve blocks in the CED*** *guideline*

Background

- Toxicity occurs with high blood levels of the drug – due to accidental intravenous injection or excess absorption from the injection site.

- Rare. Less likely from topical or ingestion route than intravenous /subcutaneous, but potentially catastrophic. Early symptoms can progress rapidly to systemic signs and cardiovascular collapse and cardiac arrest.

- Cardiac arrest is particularly resistant to standard resuscitation protocols e.g. VF may not respond to defibrillation.

- **Lipid therapy** has been found to be a successful adjunct in management of LA-induced cardiac arrest and is recommended by the National Patient Safety Agency and Resuscitation Council. It should also be given to symptomatic patients to prevent continuation to cardio-respiratory collapse.

- Lipid therapy used is **Intralipid 20%** - though recommended treatment, there is no evidence on use of Intralipid in paediatric patients.

It is the clinicians' responsibility to be aware of safe & best practice in injection / infiltration of local anaesthetics, including:

- **Maximum doses**

  Lignocaine 1% 3 mg/kg = 0.3 ml/kg
  Lignocaine 2% 3 mg/kg = 0.15 ml/kg
  Lignocaine / adrenaline (1 : 200 000) 6 mg/kg lignocaine component = 0.6 ml/kg

- **Drawing back** prior to injecting anaesthetic - ?venous injection – if blood flash back, remove.

- **Signs of toxicity** (see below)

- **Management & Treatment of toxicity** (see below)

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RECOGNITION

Signs of toxicity

- EARLY: tingling lips, ringing in ears, light-headedness, confusion, nausea & vomiting, tachycardia, hypertension
- LATER: agitation then reduced consciousness, convulsions, CVS collapse – arrhythmias, bradycardia, hypotension, arrest – VF resistant to defib may occur; asystole

MANAGEMENT

- ***STOP injecting*** **the anaesthetic**
- Call for help
- ABC assessment
  - BLS & CPR as required
- Treat what see
  - Seizures – normal protocol
  - Arrythmias
- Establish IV access (large vein)
- Continue to monitor CVS
- **INTRALIPID PROTOCOL**

TREATMENT

INTRALIPID TREATMENT PROTOCOL

Intralipid 20%

- 1.5ml/kg bolus over one minute
- Additional 1.5ml/kg bolus given after 3-5 minutes if no circulation no restored
- Follow immediately with infusion at rate of 0.25ml/kg/min
- Continue infusion until haemodynamically stable
- **Maximum total dose 8ml/kg**

References & Resources:

Anaesthesia UK: *Paediatric Regional Block Guidelines* **http://www.anaesthesiauk.com/documents/paed_block_guidelines.pdf**

Association of Anaesthetists of Great Britain (2010) *Management of severe local anaesthetic toxicity* [Online] Available from: http://www.aagbi.org/sites/default/files/la_toxicity_2010_0.pdf Last accessed 10 January 2013

Cooper, B., Moll, T. and Griffiths, J. (2010) Local anaesthetic toxicity: are we prepared for the consequences in the emergency department? *Emergency Medical Journal* 27, 599-602

Emedicine: *Local anaesthetic toxicity* **http://emedicine.medscape.com/article/1844551-overview** Last accessed 10 January 2013

Lipid Rescue www.lipidrescue.org Last accessed 10 January 2013

Toxbase: *Lignocaine and other anaesthetics* **http://www.toxbase.org/Chemicals/Management-Pages/Lignocaine-and-other-anaesthetics---injection/** Last accessed 10 January 2013