Local Anesthesia: Local and Systemic Complications

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Prior to Treatment
- complete review of medical status
- vital signs
- anxiety / fear should be assessed and managed before administering anesthetic

Drug Actions
- all drugs produce multiple effects
  - desired
  - undesired

General Principles
- no drug exerts a single action
- no drug is non-toxic
- potential toxicity is user dependent

Administration of Anesthesia
- place patient supine or semi-supine position
- dry site, apply topical x 1 minute
- select appropriate drug for treatment (time)
- vasoconstrictor unless contraindicated
- weakest anesthetic in the minimum volume
- inject slowly (minimum of 60 sec / 1.8 ml)
- continually observe - never leave patient alone after injection
Dosage
- Dosage should be based on
  - age
  - weight
  - physical status

Complications
- Syncope
  - Trendelenburg position
- Pregnancy – left lateral decubitus position
- Assess consciousness - ABC of CPR
- Most patients regain consciousness quickly
- Monitor vitals (HR, BP, RR)
  - If recovery takes > 20 minutes or
    - If LOC is > 1 minute activate EMS

Muscle Trismus
- Most common - post injection pain
- Excessive volume of LA
- Hemorrhage
- Barbed needles – 60% of needles used for IANB (inferior alveolar nerve block) came out barbed after coming into contact with mandible

Muscle Trismus
- Management
  - Examination
  - Conservative therapy
    - Passive ROM therapy
    - Analgesics (NSAID’s)
    - Heat
    - Muscle relaxants

Pain
- Rapidity of injection
- Dull needle from multiple reinjecting
- Solutions cold/warm

Edema
- Trauma during injection
- Infection
- Hemorrhage
- Angioedema – Can be Life Threatening
Infection

- very rare occurrence due to disposable needles
- injecting through an infected area (seeding the infection)

Broken Needles

- REMAIN CALM
- primary cause: sudden movement of patient
- previously bent needles
- smaller gauge needles ie 30 ga.
- refer to OMFS for consultation

Hematoma

- nicking an artery during injection
- usually seen after PSA or IANB
- may be seen intraoral or extraoral
- management – direct pressure at first evidence of hematoma
Lip Chewing

- seen in
  - children
  - mentally retarded/developmentally delayed
  - cerebral palsy and other motor disorders

Lip Chewing

- avoid problem with
  - sticker on patient’s forehead
  - use of shorter acting agents
  - educate parent/significant other/health care aide
  - may have to consider general anesthesia

Persistent Anesthesia/Paresthesia

- trauma to nerve sheath, patient reports feeling “electric shock”
- trauma to nerve – hemorrhage into/around nerve sheath can > pressure on nerve
- REMEMBER MAINTAIN CALM
- have patient return for exam and carefully examine and document
- most cases resolve within 6 – 8 weeks

Facial Nerve Paralysis

- local anesthesia is deposited into deep lobe of parotid gland
- remove contact lens of affected eye
- tape eye closed
- document in chart
- call patient in few hours

Post anesthetic intraoral lesions

- occasionally seen 2 days post injection.
- usually is recurrent aphthous stomatitis.
- rarely is viral ie. Herpes simplex
**Toxic Overdose**
- peri-oral itching/numbness
- light headedness
- tinnitus
- dizziness
- drowsiness
- disorientation
- slurred speech
- twitching of muscles
- EKG changes

**Toxic Blood Levels: Causes**
- amount of drug used
- intravascular injection
- unusually slow biotransformation/elimination (pseudocholinesterase levels)

**CARDIOVASCULAR EFFECTS- LIDOCAINE**

<table>
<thead>
<tr>
<th>Micrograms/ml Lidocaine</th>
<th>EKG CHANGES</th>
<th>HEMODYNAMIC EFFECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>7 - 50</td>
<td>P-R interval, QRS duration, Sinus bradycardia</td>
<td>Myocardial contraction, Cardiac output, Vasodilation</td>
</tr>
<tr>
<td>&gt;10</td>
<td>Above and AV block, Asystole</td>
<td>Above and Circulatory collapse</td>
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**Allergy to Local Anesthetics**
- if patient gives history of allergy to local anesthetics one must assume an allergy exists
- ask for copy of allergist report or refer patient to allergist
- postpone treatment until workup is completed

**Management of Allergic Patients**
- no invasive treatment
  - analgesics/antibiotics
  - general anesthesia
  - histamine blocker (Benadryl)
  - Other
    - electronic anesthesia
    - Hypnosis
    - nitrous oxide

**Allergens in Local Anesthesia**
- Sodium bisulfite or metabisulfite
  - preservative for vasoconstrictor
- Methylparaben – no longer used in dental cartridges but used in multi-use vials
Allergy signs/symptoms

- Skin
  - Minor rash
  - Angioedema

- Respiratory
  - Wheezing
  - Laryngeal edema
  - Tachycardia

Allergic/Anaphylactic Reactions

- Allergic
  - Benadryl and refer to private MD for allergy workup

- Anaphylactic
  - Epi-pen
  - Maintain ABC of BLS and activate EMS

References

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