

Management of Serious IV Infiltrates
East Bay Newborn Specialists Guideline
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09-27-10

Background

IV infiltrates, especially involving Calcium, can lead to tissue damage and epidermal sloughing. This tissue injury is worsened when the infiltrating solution accumulates under pressure in the perivascular space. The injury can be minimized if the infiltrating fluid is allowed to diffuse or is evacuated. Solutions at high risk for causing tissue damage: calcium, dextrose > 10%, TPN, oxycillin, potassium, contrast media, acyclovir, sodium bicarbonate, and vancomycin.

Clinical Assessment

IV site should be assessed regularly for IV infiltration per nursing protocol. Sign of IV infiltrate should be promptly reported to physician. Severity of infiltration should be determined by the physician. Mild IV infiltration could present with pain at site, local swelling with normal capillary refill time. More severe IV infiltration may show leakage at site or erythema, blanching or coolness of skin, discoloration, ischemia, blister formation and subsequent tissue sloughing. Severe IV infiltrations require medical treatment as soon as possible to prevent long term complication.

Eligible Patients

The following treatment techniques are for patients with evidence of, or at risk for, compartment syndrome. Milder infiltrates with no discoloration or evidence of ischemia can usually be treated with warm soaks and elevation.

Treatment – The principle:

- Immediately remove the involved catheter
- Combination of hyaluronidase and multiple puncture technique
- No time frame, although earlier is best
- Aggressively allow extravasated fluid to leak out, several rounds may be needed
- Apply occlusive dressing, such as hydrogel with/without bag immediately after punctures and hyaluronidase.

Multiple Puncture Method

- Premedicate with Morphine and/or provide 24% Sucrose during the procedure.
- Prep site with 2% Chlorhexidine.
- Using a sterile 22-24 gauge needle (or stylette from a 22 ga Teflon catheter), make multiple perforations over the area of greatest swelling, while gently squeezing out the fluid from the subcutaneous tissue. Up to 10 punctures may be necessary to evacuate the fluid.
- Gently squeeze to release more fluid
- Apply a saline soaked gauze sponge over the area to facilitate drainage over the next 3-4 hours.
- Repeat the procedure an additional time if necessary.

Hyaluronidase

- Dose is 20 units given SQ in divided doses around the periphery of the infiltrate. Supplied in a 200 unit vial (Vitrax) as premixed solution or powder. Withdraw 0.1ml of 200 unit/ml solution and dilute further with 0.9ml NS to 1 ml (20 units).

- Clean site with 2% Chlorhexidine and allow to dry.
- Use 23-25 guage needle for injection. No need to change needle
- Inject edges of swelling approximately in 5 equal doses (~0.2ml/dose)

Phentolamine (Regitine)

- Phentolamine is the antidote for infiltration due to alpha adrenergic agents, such as dopamine, when skin appears pale, cold and firm.
- Recommendation dose is 0.01 mg/kg/dose.
- Dilute the dose to 1 ml solution, and given SQ around the periphery of the infiltrate in 4 to 5 of 0.2 ml injections or through the IV catheter.
- It should be given within 12 hrs. Response may occur within 15-30 minutes.
- The use of repeated small doses may be best because hypotension is a potential complication.

Occlusive dressing can provide exudates management, barrier without damaging the surrounding tissue, debridement and compression. Commonly used are Hydrogel, hydrocolloid dressing, silicone dressing with antimicrobial ointment.

- **Hydrogel dressing**
 - Hydrogels consist of 80-90% water thus keeps the wound moist. It is soothing and gentle to skin
 - It facilitates autodebridement of wounds by rehydrating sloughing tissue and enhancing the rate of autolysis
 - Most Hydrogel products contain propylene glycol, and thus exhibit mild bactericidal effect.
 - Gel over the wound enclosed in a polythene bag to form a glove or boot is also used to treat IV infiltration on the arm and leg.
- **Hydrocolloid dressing**
 - Occlusive hydrocolloid dressings provide a bacterial barrier and a low pH that inhibit the growth of pathogen
 - The serous fluid accumulating under these dressings contains a higher level of keratinocytes and functioning neutrophils than other dressing, promoting rapid wound healing.

Antimicrobial agents:

- When infection is suspected, culture and treat infection.
- Consideration when using topical antimicrobial agent:
 - Silver Sulfadiazine cream is contraindicated in premature and newborn infants up to 2 months of age, because the medication competes with bilirubin for binding to albumin and can potentially increase the risk of kernicterus.

References

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