Peripheral I.V. Infiltrations

National Night Float Curriculum

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Learning Objectives

- State the difference between an infiltration and an extravasation
- Use the INS classification score to accurately stage an iv infiltration
- List the appropriate steps in management of an iv infiltration
Case 1: Night Intern

- The nurse for a 2 year old girl with pneumonia pages you to report that the iv stopped working during the Ceftriaxone infusion, and she suspects it has infiltrated.
- You head to the bedside to evaluate the situation.
Case 1: Questions

- How can you tell if the iv has infiltrated or not?
- Does it matter which fluid was infusing at the time of infiltration?
- Is it necessary to replace the iv tonight?
Case 2: Senior Resident

- You are covering the Oncology service, and you get a text page from your intern, that reads: “Patient X’s iv infiltrated and her hand is really red and swollen, not sure what to do!”
Case 2: Questions

- What possible complications are running through your mind as you rush to the bedside?

- Which complication would prompt you to page the attending on call?
Infiltrations and Extravasations

- **Infiltration** = leak of fluid into extravascular tissue

- **Extravasation** = infiltration of a vesicant

- **Vesicant** = agent that causes blistering and/or tissue damage

- **Irritant** = agent that triggers histamine release
  - Associated with increased risk of phlebitis
Infiltrations and Extravasations

- Common vesicants: diazepam, dopamine, vincristine, calcium chloride, higher concentrations of glucose and potassium, vasopressors

- Common irritants: nafcillin, clindamycin, cefotaxime, amphotericin B

- *Always* refer to your local institution formulary to determine if the infusion is a vesicant or an irritant
Infiltrations and Extravasations

- **Prevention**
  - Avoid iv catheter placement in joint sites and other high-risk sites for kinking and dislodgement, particularly for vesicant administration
  - Secure iv catheter with *transparent* tape to enable proper site assessment
  - Do not secure tape too tightly, as constriction can impede venous blood flow and increase susceptibility to vein wall rupture
  - Assess iv catheter site frequently
# INS Infiltration Scale

<table>
<thead>
<tr>
<th>Stage</th>
<th>Clinical Criteria</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>No symptoms</td>
</tr>
<tr>
<td>1</td>
<td>Skin blanched</td>
</tr>
<tr>
<td></td>
<td>Cool to touch</td>
</tr>
<tr>
<td></td>
<td>Edema &lt; 2.5cm</td>
</tr>
<tr>
<td></td>
<td>+/- pain</td>
</tr>
<tr>
<td>2</td>
<td>Skin blanched</td>
</tr>
<tr>
<td></td>
<td>Cool to touch</td>
</tr>
<tr>
<td></td>
<td>Edema 2.5cm – 15 cm</td>
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<tr>
<td></td>
<td>+/- pain</td>
</tr>
<tr>
<td>3</td>
<td>Skin blanched, translucent</td>
</tr>
<tr>
<td></td>
<td>Cool to touch</td>
</tr>
<tr>
<td></td>
<td>Edema &gt; 6 inches</td>
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<tr>
<td></td>
<td>Mild to moderate pain</td>
</tr>
<tr>
<td></td>
<td>Possible numbness</td>
</tr>
<tr>
<td>4</td>
<td>Skin blanched, translucent, tight, leaking, discolored, bruised</td>
</tr>
<tr>
<td></td>
<td>Edema &gt; 6 inches</td>
</tr>
<tr>
<td></td>
<td>Deep pitted tissue edema</td>
</tr>
<tr>
<td></td>
<td>Impaired circulation</td>
</tr>
<tr>
<td></td>
<td>Moderate to severe pain</td>
</tr>
<tr>
<td></td>
<td>Infiltration of <em>any</em> blood product, irritant or vesicant</td>
</tr>
</tbody>
</table>
Infiltrations

This child’s antibiotic infiltrate went untreated for a few days.

http://www2.nursingspectrum.com/articles/article.cfm?aid=12209
Infiltrations

This child's IV site was completely wrapped, preventing proper assessment

http://www2.nursing spectrum.com/articles/article.cfm?aid=12209
Infiltrations

The tape was fastened too tightly around this child's extremity.

http://www2.nursingspectrum.com/articles/article.cfm?aid=12209
Management

- Stop the infusion
- Disconnect the iv tubing, attach a syringe and aspirate any residual drug from the site
- Determine if infusate is a vesicant or irritant
- Remove the iv if it is not a vesicant
- Leave the iv in situ if it is a vesicant
- Describe the site using the INS classification scale
- Elevate the affected extremity
- Apply a cool pack
- Reassess the site frequently to monitor for progression to Stage 3 or 4
Management

- If the infusate is a vesicant and/or the site is Stage 3 or 4
  - Notify the attending on call
  - Refer to unit or pharmacy protocol for that specific vesicant regarding antidote administration
  - If antidote is *not* indicated, or if infusate is *not* a vesicant, remove the iv
  - Consult Plastic Surgery for assistance with local wound care
Management

- Antidotes
  - Hyaluronidase
    - Administered as subcutaneous injections
    - FDA approved for vincristine and vinblastine extravasations
  - Dexrazoxane
    - Administered via iv, given via the same iv that has infiltrated
    - FDA approved for anthracyline extravasations
Summary

- Always consult your institution’s formulary to determine if an agent is a vesicant or irritant.

- INS Infiltration Scale guides management.

- Stage 3 and 4 extravasations should always prompt a call the attending and Plastic Surgery consultation.

- Hyaluronidase and Dexrazoxane are FDA approved antidotes for certain vesicants.
References


