PERIPHERAL VASOPRESSORS

Did we help?
Peripheral Vasopressors

There are currently no guidelines for clinicians on the safe administration of peripheral vasopressors in the Emergency Department for adults. There is evidence of their use in emergent situations as a temporising measure, however there is a paucity of literature to guide clinicians on their safe use.

Vasoactive drugs have traditionally been given via a central line due to the risks of extravasation, and delayed until adequate fluid resuscitation has been given, and central access obtained. However, a growing body of evidence suggests early use of inotropes is associated with improved outcomes.¹,²

Many emergency physicians are already using peripheral vasopressors despite a lack of established guidelines. A recent systematic review conducted by Loubani et al. (2015)³, and an observational study by Cardenas-Garcia et al (2015)⁴ suggests that under certain circumstances they can be safely administered peripherally.

The systematic review looked at 85 articles and found 270 patents receiving vasopressors with a total of 325 adverse events. 318 of these were given peripherally. Of the adverse events 204 were actual tissue injury including skin / tissue necrosis and gangrene. The other adverse events were extravasation without tissue injury. The majority of bad outcomes were in patients receiving noradrenaline, administered peripherally to the antecubital fossa for > 6 hours.
Safety of Peripheral Intravenous Administration of Vasoactive Medication

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BACKGROUND: Central venous access is commonly performed to administer vasoactive medication. The administration of vasoactive medication via peripheral intravenous access is a potential method of reducing the need for central venous access. The aim of this study was to evaluate the safety of vasoactive medication administered through peripheral intravenous access.

METHODS: Over a 20-month period starting in September 2012, we monitored the use of vasoactive medication via peripheral intravenous access in an 18-bed medical intensive care unit. Norepinephrine, dopamine, and phenylephrine were all approved for use through peripheral intravenous access.

RESULTS: A total of 734 patients (age 72 ± 15 years, male/female 398/336, SAPS II score 75 ± 15) received vasoactive medication via peripheral intravenous access 783 times. Vasoactive medication used was norepinephrine (n = 506), dopamine (n = 101), and phenylephrine (n = 176). The duration of vasoactive medication via peripheral intravenous access was 49 ± 22 hours. Extravasation of the peripheral intravenous access during administration of vasoactive medication occurred in 19 patients (2%) without any tissue injury following treatment, with local phenolamine injection and application of local nitroglycerin paste. There were 95 patients (13%) receiving vasoactive medication through peripheral intravenous access who eventually required central intravenous access.

CONCLUSIONS: Administration of norepinephrine, dopamine, or phenylephrine by peripheral intravenous access was feasible and safe in this single-center medical intensive care unit. Extravasation from the peripheral intravenous line was uncommon, and phenolamine with nitroglycerin paste were effective in preventing local ischemic injury. Clinicians should not regard the use of vasoactive medication is an automatic indication for central venous access. Journal of Hospital Medicine 2015;000:000–000. © 2015 Society of Hospital Medicine
One study with a protocol

The observational study looked at 783 patients receiving peripheral vasopressors. They had very strict guidelines for peripheral use including:

- vein diameter >4mm measured on USS
- Upper limb only
- Cannula 18 or 20 guage
- No hand, wrist or antecubital fossa
- Able to draw blood from cannula prior to use
- Assessment of cannula function every 2 hours
- 72 hours maximum use

Extravasation occurred in just 19 patients (2%). These were treated with a strict protocol of phentolamine and GTN paste at the site of extravasation. **There were NO cases of tissue damage due to extravasation**
Vasopressor and Inotrope Use in Canadian Emergency Departments: Evidence Based Consensus Guidelines

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© Canadian Association of Emergency Physicians 2015;17(S1):1–16

DOI 10.1017/cem.2014.77
We talked to the author

- Warranted
- Relatively proximal
- Antecubital Fossa (but in reality we (Loubani) use the forearm as well)
- No hand or wrist
- Check its in place with US
- Draw blood
- 2-4 hrs but < 6 hrs
- Have phentolamine handy
- 4 years no complications
The ECI reviewed IMIs data over 3 years looking at incidents relating to the peripheral use of vasopressors. During this period 526,893 incidents were found with 34 directly related to the use of vasopressors. Of these 26 were related to peripheral administration of NA. Of these ‘incidents’, the majority were reports of NA being used peripherally but with no bad outcomes, indicating the need for a policy, and education around the use of peripheral NA. Actual incidents that occurred included 1 patient with skin damage, 1 patient with hypertension due to flushing the line, 1 patient who received subtherapeutic dose due to peripheral administration, and 1 patient with delay to receiving the drug due to lack of a central line.
We asked our doctors

We surveyed 210 doctors around the state regarding their use of vasopressors in the past 5 years. 102 doctors (49%) are already using peripheral NA with a reported complication rate of 5.9% (4 patients experienced arrhythmias, 1 had pain from the infusion, and 1 was reported as “other/unknown”). Of the 210 doctors surveyed only 51 (26.7%) reported having a guideline to follow regarding the use of peripheral noradrenaline.
<table>
<thead>
<tr>
<th>Noradrenaline 1:1000</th>
<th>Indication</th>
<th>IV administration</th>
<th>Check List</th>
<th>Adverse Effects</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levophed Concentration as per local policy OR 4mg in 96mLs 5% glucose = 0.04mg/mL Start at 2-5mLs/hour</td>
<td>Acute hypotension due to shock (sepsis / SIRS / drug induced)</td>
<td>Peripheral vein ≥18G Upper limb only Not antecubital fossa or hand Check position with USS Do not use for &gt;6 hours peripherally</td>
<td>Continuous ECG monitoring BP monitoring (NIBP q5mins or continuous arterial) Check site hourly Infusion to run for no more than 6 hours Aspirate line prior to cessation</td>
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<td>Reduce rate, consider alternative drug</td>
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<td>Extravasation or skin changes</td>
<td></td>
<td>Stop and disconnect infusion Aspirate residual drug from cannula Remove cannula whilst withdrawing Infiltrate phentolamine (see main text)</td>
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