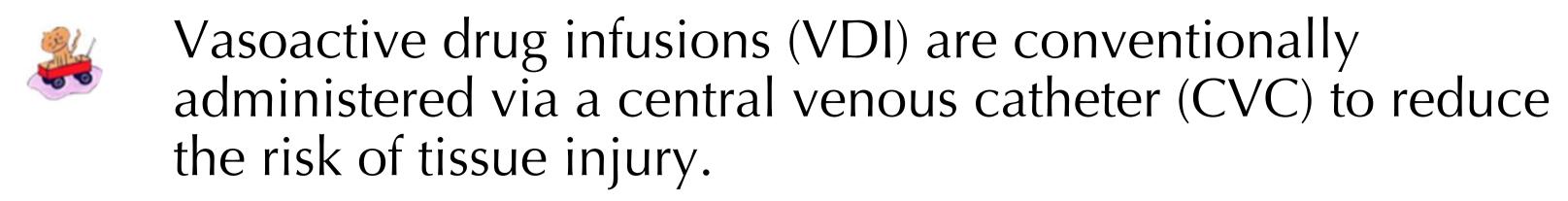
Venous catheter related tissue injury in children receiving vasoactive drug infusions during paediatric critical care transport

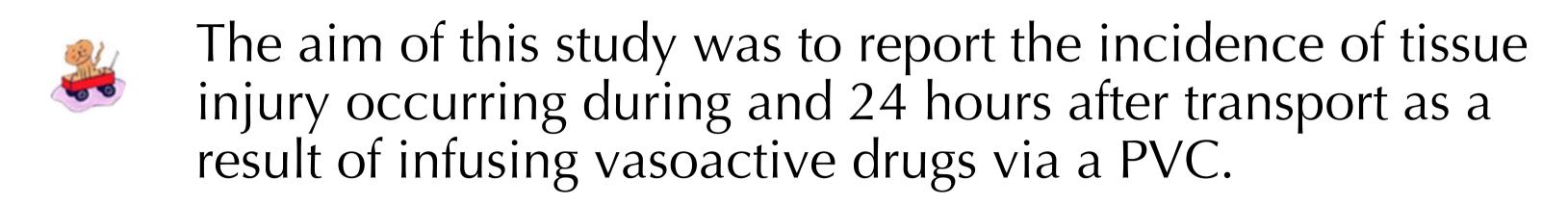


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Introduction and aims

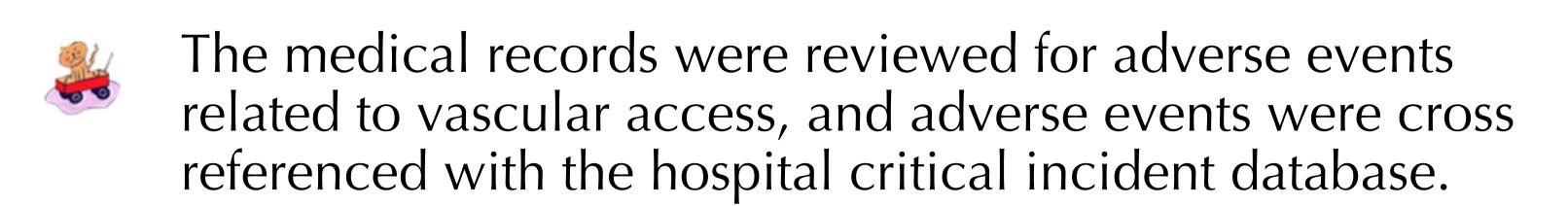






Methods

The Children's Acute Transport Service (CATS) database was searched retrospectively for patients referred between April 2017 and May 2020 where vasoactive drugs were administered during transport.



Vasoactive drugs included were adrenaline, noradrenaline, dopamine, dobutamine, and vasopressin.

	VDI via PVC	VDI via CVC	VDI via IO	p-value (PVC vs CVC)
n	199	311	48	•
Median age in months (IQR)	3 (1 - 48)	9 (0.1 - 72)	7 (1 - 36)	.70
Median weight in kg (IQR)	5.5 (3.2 - 18)	7 (3.2 - 24.4)	8.6 (3.8 - 15.1)	.21
Median maximum dose of adrenaline in mcg/kg/min (IQR)	0.2 (0.1 - 0.4) <i>(n=119)</i>	0.3 (0.1 - 0.5) <i>(n=245)</i>	0.35 (0.2 - 0.6) (n=41)	<.001
Median maximum dose of dopamine in mcg/kg/min (IQR)	10 (10 - 15) <i>(n=88)</i>	15 (10 - 20) <i>(n=90)</i>	20 (10-20) (n=12)	.08
Median PIM3 score (IQR)	0.035 (0.008 - 0.075)	0.091 (0.044 - 0.224)	0.094 (0.046 - 0.244)	<.001
Median stabilisation time in minutes (IQR)	140 (110 - 170)	151 (120 - 191) <i>(n=207*)</i>	165 (125 - 194)	.03*
Median journey time in minutes (IQR)	43 (30 - 61)	40 (27 - 70)	40 (30 - 54)	.49
Septic shock n (%)	39 (19.6)	73 (23.5)	13 (27.1)	.30
Congenital heart disease n (%)	14 (7)	42 (13.5)	5 (10.4)	.02
Bronchiolitis n (%)	36 (18)	12 (3.9)	5 (4.2)	<.001
LRTI n (%)	39 (19.6)	39 (12.5)	16.7 (8)	.03
Cardiac arrest n (%)	9 (4.5)	23 (7.4)	8 (16.7)	.19
Tissue injury events n (%)	7 (3.5)	2 (0.6)	3 (6.3)	.02

RESULTS

A total of 3836 children were transported, of which of 558 required vasoactive drug infusions.

Seven incidents of tissue injury were noted out of the **199 cases** (**3.5**%) where vasoactive drug infusions were administered via a PVC. Four extravasation incidents required no intervention, two required a review by a plastic surgeon but with no lasting injury, and in one incident – a child with severe circulatory failure – there was anticipated loss of limb function.

359 vasoactive infusions were administered by CVC, with six reports of tissue injury (1.7%), four of which involved intraosseous (IO) needles.

On 21 transports noradrenaline was administered via a PVC, with no incidents of tissue injury reported.

Discussion and Conclusions

The incidence of extravasation injuries following administration of vasoactive drugs via PVC's in children is low. PVC's can be used with caution to safely administer vasoactive drugs during stabilisation and transfer of critically unwell children until definitive central venous access is established.

References

1. Weiss SL, Peters MJ, Alhazzani W, Agus MSD, Flori HR, Inwald DP, et al. Surviving sepsis campaign international guidelines for the management of septic shock and sepsis-associated organ dysfunction in children. Pediatr Crit Care Med. 2020;21(2):e52–106.