

Vasopressin Therapy in Vasodilatory Shock on Adult ICU

Key Points

- Vasopressin is a powerful vasoconstrictor, its use is to be considered in patients with refractory shock despite adequate fluid resuscitation and high dose conventional vasopressors.
- Treatment should be initiated by a consultant experienced in the management of critically ill patients.
- Vasopressin is not recommended as the single initial vasopressor for treatment of sepsis-induced hypotension.

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Abbreviations

ECG	Electrocardiogram
MAP	Mean Arterial Pressure

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Indication

Hypotension in septic shock (unlicensed indication).

Suggested in addition to refractory shock when noradrenaline requirements are high.

Background

Vasopressin is an endogenous hormone which has a range of physiological functions, including water conservation (as anti-diuretic hormone) and vasoconstriction. Vasopressin is a powerful vasoconstrictor drug that has no inotropic effect. Its use is to be considered (according to the Surviving Sepsis Guidelines¹) in patients with refractory shock despite adequate fluid resuscitation and high dose conventional vasopressors. Vasopressin is not recommended as the single initial vasopressor for treatment of sepsis-induced hypotension but should be added to existing vasopressor therapy, e.g., noradrenaline¹. Unlike other vasopressors, vasopressin acts at its own receptors and does not act on beta or alpha adrenergic receptors.

Prescribing

Consultant decision ONLY

The aim of therapy is to permit reduction in the dosage of other vasoconstrictor drugs, e.g., noradrenaline. **Not to be used as a sole agent.**

Vasopressin IV infusion

Add 20 units vasopressin* in total volume of 50ml Glucose 5% or Sodium Chloride 0.9% at rate of 0.01 to 0.04 units/ minute.

Administration

Vasopressin has a relatively long half-life (approximately 10-20 minutes²) thus double pumping, as a means of renewing an infusion, is NOT necessary.

For use via central venous catheter.

Preparation

- 1) Draw up 1ml of 20units/ml vasopressin injection in a 50ml syringe
- 2) Dilute to 50ml in 5% glucose or Sodium Chloride 0.9% (unlicensed) (Solution concentration 0.4units/ml)^{3,4}

Starting rate

0.03 units/min^{1,12} (4.5ml/hour)

Titration

0.01 to 0.04 units/min¹ (1.5ml to 6ml/hour)

Adjust the rate as required in 0.01units/min (1.5ml/hr) increments, at half to one hourly interval, to a maximum of 0.04 units/min (6ml/hr). The initiation of vasopressin should allow

other vasopressor infusion rates, such as noradrenaline, to be reduced⁶. Concomitant vasopressors should be reviewed to prevent hypertension and arrhythmias.

Do not exceed the maximum dosage, i.e., 0.04units/min (6ml/hr) as doses greater than 0.04 units/min have an increased risk of cardiac arrest⁵.

In exceptional circumstances, higher doses up to 0.06 units/min are reserved for salvage therapy (i.e., not achieving target MAP despite other vasopressor therapy)^{1,11}.

To avoid adverse effects resulting from an unintentional 'bolus' dose flush at the same rate the medicine was administered⁴.

Discontinuing the Infusion

As the patient's condition improves the vasopressin should be slowly weaned down and off before the noradrenaline is stopped. Reduce the vasopressin infusion by half every 30 minutes down to 0.01units/min (1.5mL/hour) then stop¹³.

Compatibility

Compatible: (where medicines meet close to the vascular access device):

Y-site compatible with adrenaline, amiodarone, dobutamine, dopamine, heparin, insulin, lidocaine, milrinone, Glyceryl trinitrate, noradrenaline, pantoprazole^{4,7}.

Incompatible: Phenytoin, Furosemide⁴.

Check Medusa for further information on compatibility.

Comments

* This has various names - argipressin, pitressin, vasopressin.

Some brands may be stored in the fridge.

Adverse Effects and monitoring

Adverse effects ^{2,8,9}	Monitoring/ considerations
o Peripheral ischaemia including ischaemic skin lesions	– Regular checks for signs of peripheral ischaemia i.e., dusky fingertip/toes
o Myocardial ischaemia (including symptoms of angina in those with known ischaemic heart disease)	– 12 lead ECG, Troponin, echocardiogram, continuous ECG monitoring
o Cardiac dysrhythmia (Ventricular tachycardia, ventricular fibrillation and Torsades des pointes)	– Continuous ECG monitoring, mean arterial pressure
o Rebound hypotension on discontinuation	– Blood pressure, reduce rate more slowly if hypotension problematic ¹⁰
o Gastrointestinal ischaemia, abdominal cramps, nausea and vomiting	– Increased lactate or unexplained lactic acidosis
o Fluid retention	– Monitor fluid balance

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Full version control record

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Version Control Sheet

Version	Date	Guideline Lead(s)	Status	Comment
1	23/04/2018	Nicole Nowell Sophia Ahmad Dr Mark Blackmore Dr Tiina Tamm	Final	Published on ourplace.
2	19/10/2020	Nicole Nowell Sophia Ahmad Dr Mark Blackmore Dr Tiina Tamm	Final	Pharmaceutical dosing checked by Katherine Lee
3	17/04/2024	Sophia Ahmad	Final	Amended to trust guideline template. Checked and updated references Added new reference Ref 12 and 13 Added information on discontinuing vasopressin and Medusa advice on flushing.

Related Documents

None