Enoximone in ICU

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Enoximone is a phosphodiesterase type-3 inhibitor that exerts most effect on the myocardium; it has positive inotropic properties and vasodilator activity. Enoximone is an inodilator.

Preparations
Enoximone 100mg/20mL concentrate for dilution. Available in **B3SITU** omnicell

Clinical use

- It is indicated for the short-term treatment of congestive heart failure, typically where cardiac output is reduced and filling pressures increased.
- It differs in structure and mode of action from digitalis glycosides and catecholamines.
- The dosing regimen below will normally produce a 30% or greater increase in cardiac output and/or decreases in pulmonary capillary wedge pressure of about 30% and right atrial pressure of about 40%.
- The initial haemodynamic response determines the subsequent rate of administration and duration of treatment.
- The duration of therapy should depend on the patient's continued positive and beneficial response. Sustained haemodynamic and clinical effects have been observed in patients treated for up to 48 hours.

Administration (see https://medusa.wales.nhs.uk/Home.asp)

- Dilute with an equal volume of sodium chloride 0.9% to produce a 2.5mg in 1mL solution. (eg.1 amp (100mg/20mL) diluted to a total volume of 40ml) Do not use more dilute solutions as crystal formation may occur.
- Start enoximone infusion at 5mcg/kg/min. Enoximone may take up to 30 minutes to act. Wait at least 30 minutes before increasing dose, if needed.
- A maximum of 20 micrograms/kg/minute may be needed. The total dose over 24 hours should not normally exceed 24.0 mg/kg.
- Enoximone should be administered via a dedicated port on the central line as it has a high pH, osmolarity and contains alcohol & Propylene Glycol.
- Do not refrigerate once diluted, as crystal formation may occur.
- Occasionally, enoximone has produced 'furring of the lines'.

Renal impairment

In patients with creatinine clearance below 40 ml/min, enoximone clearance is significantly reduced and the ratio of the active metabolite to enoximone plasma concentrations is significantly increased. Therefore, consider dose reduction.

Hepatic impairment

Half-life may increase in severe liver impairment causing accumulation.

Pharmacokinetics

Although the exact mechanism of action of enoximone is not completely understood, available evidence suggests that positive inotropic effects are primarily mediated via selective inhibition of phosphodiesterase. This inhibition results in increases in intracellular levels of cyclic AMP, which facilitate enhanced flux of calcium through sarcolemmal slow channels and increased calcium uptake by the sarcoplasmic reticulum.

An increased rate of relaxation of the heart is observed, but contractions are also enhanced as a result of increases in the total amount of intracellular calcium. Similarly relaxation of peripheral vascular smooth muscle due to elevations of intracellular cyclic AMP promoted by enoximone in these tissues may be responsible for vasodilatory properties of the drug and resultant decreases in systemic vascular resistance.

The half-life of enoximone is approximately 8 hours and it takes approximately 30 minutes to have an effect.

Contraindications

Hypersensitivity to the active substance or to any of the excipients.

Cautions

Use cautiously when heart failure is associated with hypertrophic cardiomyopathy, stenotic or obstructive valvular disease or other outlet obstruction.

Fluid and electrolyte status and renal function should be assessed during therapy and corrective measures should be instituted before or during therapy to limit pre-disposition to arrhythmias.

Adverse Effects

Arrhythmias, Platelet Count Reduction, Gastrointestinal Side Effects, Increases in Hepatic Enzyme Levels

Alternative names: Perfan ®

More Information & References:

https://medusa.wales.nhs.uk/IVGuideDisplay.asp
https://medusa.wales.nhs.uk/docs/SPCs/Enoximone%20SPC.pdf
https://www.medicinescomplete.com/#/content/bnf/_367904999?hspl=enoximone