Guideline for the administration of intravenous Isoprenaline Hydrochloride

Indication

Isoprenaline is a sympathomimetic that acts almost exclusively on beta-adrenergic receptors. It has a powerful stimulating action on the heart and increases cardiac output, excitability, and rate. It is used to maintain heart rate **temporarily** in patients with heart block **only until a temporary or permanent pacemaker can be fitted.** It should only be administered in an appropriate high care environment such as CCU or critical care **on the advice of a senior clinician. (Cardiologist/Intensivist)**

Dose for cardiac disorders

Isoprenaline is given as an intravenous infusion under ECG control; the dose is adjusted according to response and the patient's condition. In emergencies, a slow intravenous infusion is given in doses typically ranging from 0.5 to 5 micrograms/min, although higher doses may be necessary.

Presentation

There are 2 preparations available;

Isoprenaline hydrochloride 2mg in 2ml (unlicensed)

Isoprenaline hydrochloride 1mg in 5ml (licensed)

Caution-The product stocked in your area may change due to availability issues

Isoprenaline hydrochloride 2mg is equivalent to isoprenaline sulphate 2.25mg

Administration

Preferably administer via a central line to avoid potential irritation due to the products low pH, should this not be possible a large peripheral vein should be used and the insertion site should be monitored closely for signs of phlebitis and extravasation.

The maximum concentration that should be administered **peripherally should be 4 microgram/ml** (although stronger concentrations may be given centrally.)

Dilute with **glucose 5% only** as isoprenaline hydrochloride is acidic and has shown significant decomposition at a pH value above this.

Dilute Isoprenaline hydrochloride 2mg injection to 500ml glucose 5%. This creates a concentration of **4 microgram/ml** (max concentration for peripheral administration)

Commence infusion at a rate of 1microgram/min (15mls/hr). Consider titrating up in steps of 1microgram/min at intervals of 2-3 minutes, until a satisfactory heart rate is achieved or adverse effects such as hypotension or ventricular arrhythmias occur. (Usual max: 10mcg/min) (150ml/hour)

Dosing table for Isoprenaline hydrochloride 2mg/500ml glucose 5%=4microgram/ml

Dose (microgram/min)	Rate of infusion (ml/hr)
1 microgram/min	15ml/hr
2 microgram/min	30ml/hr
3 microgram/min	45ml/hr
4 microgram/min	60ml/hr
5 microgram/min	75ml/hr
6 microgram/min	90ml/hr
7 microgram/min	105ml/hr
8 microgram/min	120ml/hr
9 microgram/min	135ml/hr
10 microgram/min	150ml/hr

Adverse effects:

Tachycardia, cardiac arrhythmias, palpitations, hypotension, tremor, headache, sweating and facial flushing.

References

Further information can be found in the medusa monograph for isoprenaline hydrochloride

Details on dosing can be found in Martindale "The Complete Drug Reference". Accessed via Medicines Complete on 22/11/22