A retrospective evaluation of non-operative use of push dose phenylephrine in critically ill adults

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OBJECTIVE

To investigate the efficacy, safety and usage patterns of push-dose phenylephrine in non-operative, critically ill patients.

BACKGROUND

In the last five years, there has been an increase in literature evaluating the use of push-dose vasopressors in hemodynamically unstable patients within emergency departments or critical care areas.1-3

The most common indications include hypotension in the peri-intubation period, during procedural events, and non-procedure related episodes.

In May 2017, push-dose phenylephrine, packaged as 1000 mcg/10 mL syringes, was approved for use in the emergency department at Parkview Regional Medical Center. In July 2019, this was expanded for use in critical care areas.

Push-dose phenylephrine has been associated with adverse drug reactions, such as hypertension, bradycardia, and extravasation.1-4

METHODS

Retrospective review of all patients outside of the OR who received at least one push-dose of phenylephrine during an inpatient stay between June 2018- May 2020.

The impact of phenylephrine on hemodynamic parameters was evaluated by comparing mean arterial pressure (MAP) and heart rate (HR) within 30 minutes pre and post drug administration.

The effectiveness of phenylephrine was evaluated by evaluating how many patients required additional interventions to increase blood pressure (e.g. intravenous fluid bolus, continuous infusion vasopressor).

Adverse drug reactions (ADRs) resulting from push-dose phenylephrine and interventions to mitigate these were collected.

An ADR was defined as systolic blood pressure (SBP) >180 mmHg, diastolic blood pressure (DBP) >100 mmHg, heart rate (HR) < 50 beats per minute (bpm), and/or extravasation that occurred within 30 minutes of the dose.

The utilization of push-dose phenylephrine in critical care patients does not negate the need for additional vasopressor support in the majority of patients. Further research is warranted to assess the duration of action and prevention of invasive interventions.

RESULTS

143 patients were analyzed and twelve received ≥ 1 dose, resulting in a total of 158 administrations of push-dose phenylephrine

- Median dose of phenylephrine was 200 mcg (IQR:100-300)

- Additional therapies to increase blood pressure were used within one hour of phenylephrine administration in 74 patients

- 8 of these patients received >1 additional therapy

- Adverse drug reactions occurred within 30 minutes in 11 (7.7%) patients

DISCUSSION & CONCLUSIONS

- Phenylephrine was most often utilized in the peri-intubation setting within the medical ICU

- The median dose of phenylephrine administered was 200 mcg

- Push-dose phenylephrine proved to be relatively well-tolerated, and ADRs occurred in 11 patients

- The efficacy of push-dose phenylephrine proved to be transient, and many patients required additional therapies within one hour of the dose to raise blood pressure

- The utilization of push-dose phenylephrine in critical care patients does not negate the need for additional vasopressor support in the majority of patients

REFERENCES


The authors of this presentation have the following to disclose in the interests of full transparency: Erin Dark, Dustin Linn, Jamie Gaul, Abby Todt: Speaking Fees: Parkview Regional Medical Center.