Education of SRNAs on the Role of Vasopressin in Attenuating Hypotension: Cardiac and Non-Cardiac Anesthesia

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PROBLEM

Hypotension during the perioperative period is a common occurrence and often has multifactorial etiologies. Common treatments of hypotension include fluid administration, decreasing anesthetic depth, and/or pharmacologic vasopressor therapy. Commonly used pharmacologic modalities among anesthetists are phenylephrine, norepinephrine, ephedrine, and epinephrine. Although these medications are frequently successful at improving hypotension, certain situations, patient comorbidities, and/or procedures require the anesthetist to consider utilizing less common interventions which may be more patient specific and can lead to decreased morbidity and mortality. SRNAs entering their specialty rotations will be tasked with providing anesthetic care to complex patients that require these advanced interventions, and will benefit from expanding their knowledge on alternative treatment options. Vasopressin is a vasopressor that offers unique benefits to counteract hypotension, and has proven to benefit patients in specific situations. **Adequate knowledge of how to utilize vasopressin is vital as SRNAs enter said specialty rotations and which highlights the need for this project.**

LITERATURE REVIEW

There are specific situations in which vasopressin is an appropriate vasopressor for intraoperative hypotension, therefore appropriate use of this drug is paramount to clinical success.

Patients Taking Ace Inhibitors:

- Causes refractory intraoperative hypotension when taken within 24 hours of surgery (Hedmen, Mann, Spelucki, & Castner, 2016)
- Intermittent vasopressin bolus doses are highly successful in treatment of this hypotension (Hedman et al 2016)
- ACLS guided dose= 40 units vasopressin in comparison to 1 dose of epinephrine (ACLS, 2017)

Patients Undergoing Cardiac Surgery:

- Vasopressin useful for hypotension with adequate cardiac output (Haijar, 2017)
- Vasopressin has less damaging side effects than other catecholamine vasopressors (Egelby and Sabry, 2012)
- Dose: 1-6 Units/hour titrated to goal blood pressure

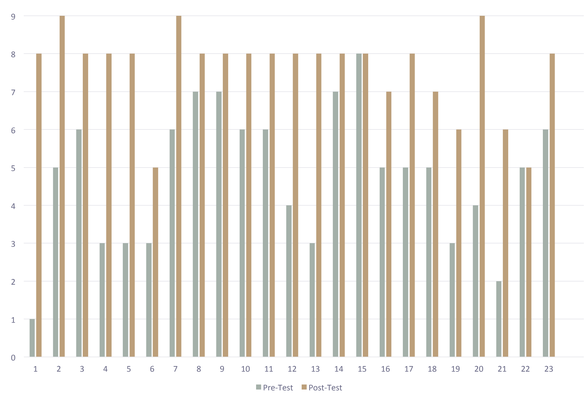
Patients in Shock States

- Septic Shock: inverse relationship between survivability and endogenous Vasopressin levels (Holt & Haspel, 2010)
- Anaphylactic Shock: Vasopressin blocks the effects of inflammatory mediators via cyclic-GMP (Schumer et al 2008)
- Hemorrhagic Shock: Vasopressin's vasoconstrictive and water retention properties significantly improve status (Tsuneyoshi, 2005)

METHODS

A PowerPoint presentation describing the mechanism of action, clinical uses, and appropriate doses of vasopressin was prepared and presented to a convenience sample of 23 junior SRNAs currently enrolled at Adventist University of Health Sciences. A pre and post test was administered and scores were analyzed using SPSS to track potential score improvement.

RESULTS



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ANALYSIS & CONCLUSIONS

Research Question: among SRNA students, will an educational clinical presentation improve their knowledge base and ability to integrate vasopressin into clinical practice in caring for perioperative hypotension among complex patients in specialty rotations?

The obtained t (-7.528, $p < .001$) is statistically significant. It therefore can be concluded that the average scores between pre-test and post-test increased significantly.

- No student had a decrease in score from pre-test to post-test
- The most significant increase in score was 7 out of 10 points

Ability to integrate this knowledge into clinical practice is a variable of the research question that was unable to be determined by the design of this study. Only inference can be made that an increase in practical knowledge will increase clinical success in Vasopressin use.

Limitations:

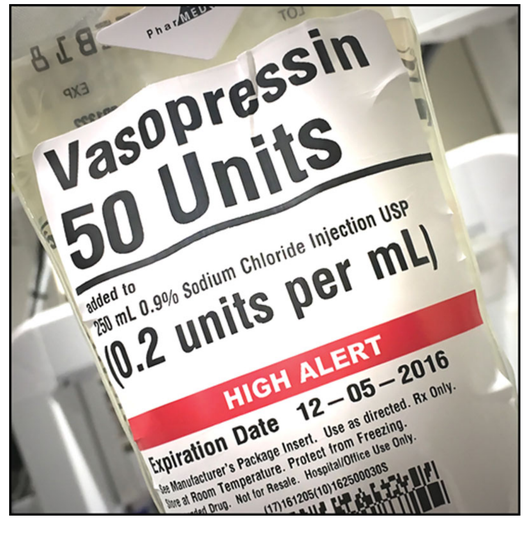
- Single site study
- Small sample size
- Convenience sampling
- Variety of previous education

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Test - Post-Test	-2.82609	1.80031	.37539	-3.60460	-2.04758	-7.528	22	.000

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test	4.7826	23	1.80798	.37699
	Post-Test	7.6087	23	1.11759	.23303



http://anesthesiology.pubs.asahq.org/article.aspx?articleid=2587564

FINDINGS

In conclusion, this study was successful in increasing the knowledge base of its 23 participants regarding the use of Vasopressin. This improved knowledge base can guide them during their clinical practice when determining whether or not Vasopressin is the best treatment for a hypotensive patient.

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REFERENCES

Available upon request