

PHENYLEPHRINE USE ALTERS SHOCK INDEX RELIABILITY WITH POSTPARTUM HEMORRHAGE DURING CAESAREAN DELIVERY

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Background

- Early recognition of postpartum hemorrhage (PPH) is necessary to prevent morbidity and mortality
- Shock Index has been used to identify patients at risk for massive transfusion in trauma patients, with **SI > 0.9 correlating with needing a transfusion**

$$\text{Shock Index} = \frac{\text{Heart Rate}}{\text{Systolic Blood Pressure}}$$

Methods

- Retrospective study: all women who had PPH (>1 L blood loss) during cesarean delivery over two years
- Calculated SI at time points after PPH (5, 15, 30, 45, and 90 min)

Results

- N = 811; 148 (18%) received a transfusion
- Transfused patients had significantly higher estimated blood loss, crystalloids administered, and phenylephrine administered
- Transfused patients had higher median max shock index (1.0 vs. 0.95, $p < 0.01$)
- Positive predictive value of max SI > 0.9 predicting need for transfusion = 21% (95% CI, 17.7% - 25.0%)
- **Notable overlap in max shock index interquartile ranges between groups**
- **Both groups' median maximal shock index > 0.9**

	Not transfused N=663	Transfused N=148	P value
Age (years)	34 (31 - 38)	33 (30 – 37)	0.03
Body mass index (kg/m ²)	32.0 (28.5 - 35.9)	30.7 (30 – 37)	0.07
Estimated blood loss (mL)	1250 (1100 – 1500)	1800 (1300 – 2665)	0.001
Crystalloids administered (mL)	2500 (2000 – 3000)	3000 (2200 – 4000)	0.0001
Phenylephrine administered (mg)	630 (100 – 1440)	900 (400 – 2190)	<0.001
Number of units of blood transfused	0	2 (1 – 4)	
Maximal shock index	0.95 (0.82 - 1.06)	1.0 (0.88 - 1.14)	<0.01
ICU admission	3 (0.45%)	16 (10.8%)	<0.01

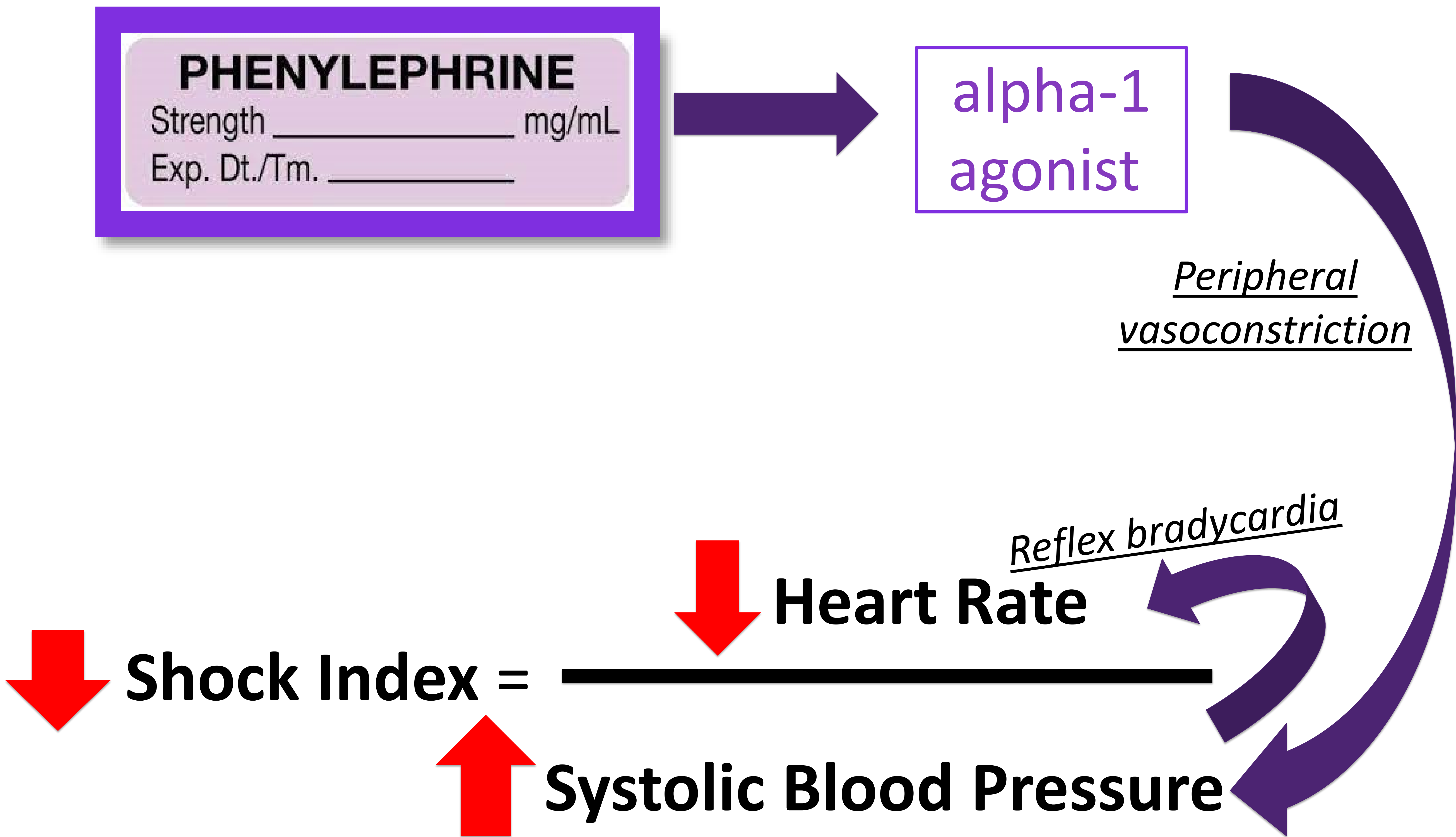
514 women with max SI >0.9: 73% transfused ($p=0.004$)
PPV max SI > 0.9 = 21% (95% CI 17.7% - 25.0%)

Discussion

- Phenylephrine artificially lowers shock index
- Transfused patients received more phenylephrine
- Previous studies do not comment on phenylephrine administration
- Prophylactic phenylephrine is recommended for all scheduled cesarean deliveries

Conclusions

- Phenylephrine appears to alter shock index reliability
- Future research also needed into how hypertensive disorders of pregnancy (gestational hypertension, pre-eclampsia) affect reliability of shock index



References

