

The Perfusion Index Derived from a Pulse Oximeter for Predicting Low Superior Vena Cava Flow in Very Low Birth Weight Infants.

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Objective

Superior vena cava (SVC) flow is used as an index for evaluating systemic blood flow in neonates. Thus far, several reports have shown that low SVC flow is a risk factor for intraventricular hemorrhage (IVH) in the preterm infant. Therefore, it is likely to be a useful index in the management of the preterm infant. The perfusion index (PI) derived from a pulse oximeter is a marker that allows noninvasive and continuous monitoring of peripheral perfusion. The objective of this paper was to determine the accuracy of the PI for detecting low SVC flow in very low birth weight infants born before 32 weeks of gestation.

Study Design

We studied the correlation between PI and SVC flow 0 to 72 h after birth in very low birth weight infants born before 32 weeks of gestation. The best cut-off value for low SVC flow was calculated from the respective receiver-operating characteristic curves.

Results

A positive correlation was found between the PI and SVC flow ($r=0.509$, $P<0.001$). The best cut-off value for the PI to detect low SVC flow was 0.44 (sensitivity 87.5%, specificity 86.3%, positive predictive value 38.9%, negative predictive value 98.6%).

Conclusion

This study found that the PI was associated with SVC flow, and it was a useful index for detecting low SVC flow in very low birth weight infants born before 32 weeks of gestation. Therefore, use of the PI should be evaluated in the cardiovascular management of the preterm infant.