

Noninvasive Peripheral Perfusion Index as a Possible Tool for Screening for Critical Left Heart Obstruction.

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Aim

Peripheral perfusion index (PPI) has been suggested as a possible method to detect illness causing circulatory embarrassment. We aimed to establish the normal range of this index in healthy newborns, and compare it with newborns with duct-dependent systemic circulation.

Methods

Design: We conducted a case-control study. **Setting:** Our study population comprised 10,000 prospectively recruited newborns from Västra Götaland, Sweden. **Patients:** A total of 10,000 normal newborns and 9 infants with duct-dependent systemic circulation (left heart obstructive disease [LHOD] group) participated in the study. **Interventions:** We conducted single pre- and postductal measurements of PPI with a new generation pulse oximeter (Masimo Radical SET) before discharge from hospital.

Results

PPI values between 1 and 120 h of age show an asymmetrical, non-normal distribution with median PPI value of 1.70 and interquartile range of 1.18-2.50. The 5th percentile = 0.70 and 95th percentile = 4.50. All infants in the LHOD group had either pre- or postductal PPI below the interquartile range, and 5 of 9 (56%) were below the 5th percentile cut-off of 0.70 ($p < 0.0001$, Fisher's exact test). A PPI value < 0.70 gave an odds ratio for LHOD of 23.75 (95% CI 6.36-88.74).

Conclusion

PPI values lower than 0.70 may indicate illness and a value < 0.50 (1st percentile) indicates definite under perfusion. PPI values might be a useful additional tool for early detection of LHOD.