Perfusion Index Measurement in Preterm Newborns during the First Days of Life

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Background

Perfusion Index (PI) is a non-invasive, continuous indicator of peripheral perfusion and it seems to be a marker of severe conditions from different causes. Reference values of PI in term newborns have been recently published, but only few data exist about PI values in preterm newborns. *Objective*: To determine PI values in the first days of life in preterm newborns, even in correlation with gestational age (GA) and birth weight (BW).

Design/Methods

We studied 35 neonates born ≤32 weeks GA without malformation syndromes (mean GA: 29,33±2,04 weeks; mean BW: 1192±395 g). The newborns were divided according to GA in 24-28 weeks (group1) and 29-32 weeks (group2) and to BW ≤1000 g (group A) and >1000 g (group B). PI was measured at 25-48, 49-72, 73-96 hours of life; it was recorded continuously for 10' (average of values recorded every 20“) at the right hand and foot by Masimo Radical-7 pulse oximeter.

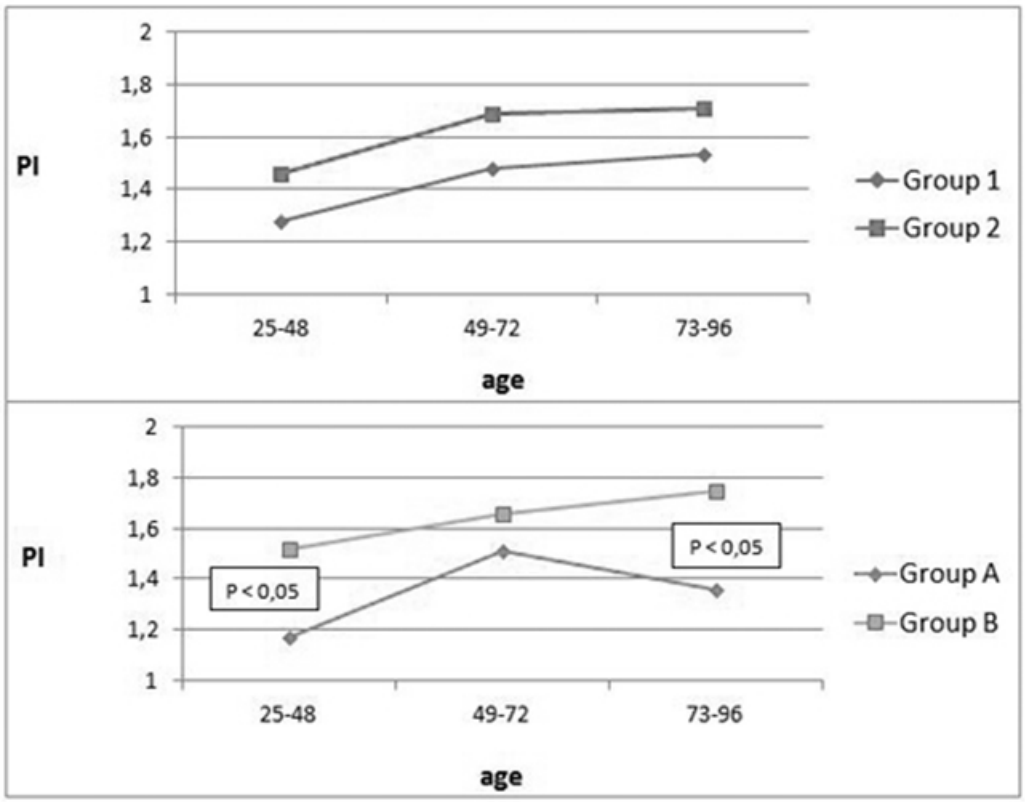
Results

Median PI at 25-48 hours of life is 1,30, at 49-72 hours is 1,52 and at 73-96 hours is 1,45. At 25-48, 49-72, 73-96 hours group1 has lower PI than group2 and group A has significantly lower PI than group B.

Conclusion

Median PI is lower at 25-48 hours of life, when preterm neonates are at higher risk of peripheral hypoperfusion. PI grows in the following days reflecting the hemodynamic changes.
PI has a positive correlation with GA and a statistical significance with BW at 25-48 hours and at 73-96 hours. PI measurement is an effective method to monitor preterm newborns in the first days of life.

age	Group 1	Group 2	p	Group A	Group B	p
25-48	1,28±0,28	1,46 ± 0,53	ns	1,17 ±0,29	1,52 ± 0,49	<0,05
49-72	1,48±0,62	1,69 ±0,57	ns	1,51 ±0,49	1,66 ± 0,64	ns
73-96	1,53±0,70	1,71 ± 0,59	ns	1,36 ±0,75	1,75 ± 0,56	<0,05


PI
2
1,8
1,6
1,4
1,2
1
25-48
49-72
73-96
age
Group 1
Group 2
PI
2
1,8
1,6
1,4
1,2
1
P < 0,05
P < 0,05
25-48
49-72
73-96
age
Group A
Group B