

Detection of Hypoxaemia in Preterm Infants: Evaluation of a New Technology Pulse Oximeter.

Bohnhorst B., Poets C.F. *Pediatr Res.* 1998;44(30):443.

Aims

Pulse oximeters are increasingly used to detect hypoxaemia in preterm infants; however they are traditionally very prone to movement artifact, resulting in frequent false alarms. A newly developed instrument was recently shown to reduce overall alarm rates by 93%. 1. We wanted to know whether this presumed reduction in false positive alarms is achieved at the expense of an increased proportion of false negative alarms, ie.. missed or delayed identification of hypoxaemia

Methods

Long-term recordings of transcutaneous PO₂ (Kontrol 7561, Watford, UK) and pulse oximeter saturation (SpO₂; Masimo SEST, Irvine, CA) were performed in 10 infants (median GA at birth 25 wk (range 24-30), age at study 1 wk (1-11) with severe apnoea of prematurity. Hypoxaemia was defined as a fall in TcPO₂ to ≤ 40 mmHg. A hypoxaemic episode was classified as identified by the pulse oximeter if there was a fall in SpO₂ to $\leq 85\%$ within 2 minutes of TcPO₂ reaching 40 mmHg.

Results

62 falls in TcPO₂ to ≤ 40 mmHg occurred in 8 infants; 61 (98%) were identified by the pulse oximeter (median interval 25s before the fall in TcPO₂ to ≤ 40 mmHg, maximum interval 90 s after it). The SpO₂ nadir during the episode where the oximeter had not alarmed was 86%.

Conclusion

The reduced alarm rate previously found for the new oximeter evaluated in this study was not achieved at the expense of a delayed or unreliable identification of hypoxaemic episodes.