Clinical Practice and SpO_2 Technology in the Prevention of ROP in VLBW Infants.

Castillo AR, Deulofeut R, Sola A. Presented at the Pediatric Academic Societies Annual Meeting. May 5-8, 2007. Toronto Canada. Available at http://www.abstracts2view.com/pas/search.

Introduction

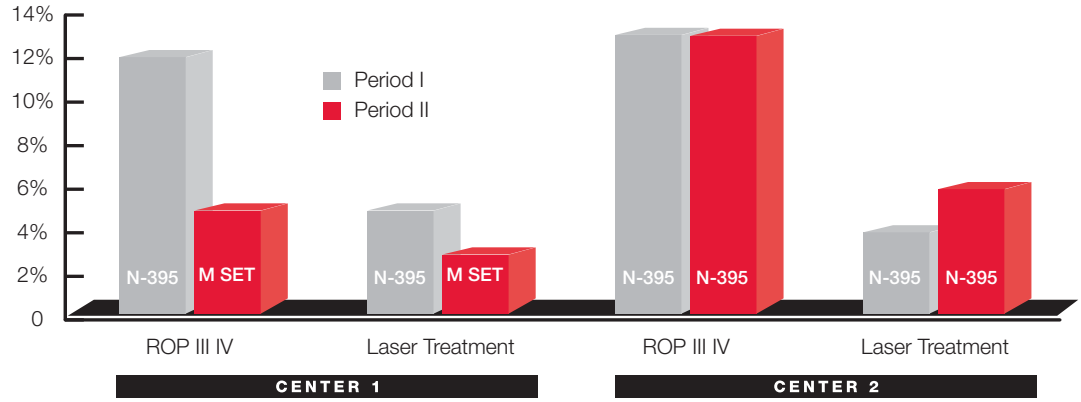
Strict management of O_2 delivery in very low birth weight (VLBW) infants has been associated with decreased rates of Retinopathy of Prematurity (ROP), a devastating disease that can result in lifetime blindness. Because the accurate monitoring of oxygen saturation in these patients is an essential part of the clinical practice change which is thought to decrease the incidence of ROP, these researchers tested whether the performance of the pulse oximeter used was associated with a reduction in the rate of ROP.

Methods

To compare the incidence of severe ROP (ROP III-IV) and laser treatment at two centers using the same treatment protocol but different pulse oximetry technologies, the incidence of ROP was calculated for 449 VLBW infants (<1,250 gm) from two treatment centers during two time periods. Birth weight and gestational age of the patients from both centers were similar (895 +/- 190 gm; 27 +/- 2 days). During Period I (2000-2002) both treatment centers used Nellcor N-395 pulse oximeters to maintain O_2 saturation levels at >95%. During Period II (2003-2004) Center 1 changed to using Masimo SET Radical pulse oximeters and Center 2 continued to use the Nellcor devices (N-395) to maintain O_2 saturation levels at 88-93%. Eye exams for all patients were performed by the same ophthalmology department using the same criteria.

Results

Incidence of ROP II-IV and Laser Treatement when using Nellcor N-395 or Masimo SET Pusle Oximetry



There was a relative risk reduction of 58% for the incidence of ROP III-IV and 40% for the incidence laser treatment following Period 2, with the use of Masimo SET pulse oximetry. There was no significant change in the incidence of these measures following Period 2 with the use of Nellcor pulse oximetry ($p>0.05$).

Conclusion and Authors' comments

Changing to Masimo SET pulse oximetry as part of the overall clinical practice change was associated with a decreased incidence of severe ROP and the need for laser treatment during the period when SpO_2 levels were maintained at 88-93%, whereas no decrease in the incidence of ROP occurred during that period at the center that continued to use the Nellcor pulse oximeters. The authors concluded "Retinopathy of prematurity (ROP) can be a devastating disease. Efforts to lower ROP rates include… guidelines to decrease hyperoxemic periods and wide changes in oxygenation and the advances in SpO_2 technology…In a large group of examined inborn infants …treated by the same neonatologists, MD's and NNP's, using the same clinical guidelines to decrease hyperoxemia and wide changes in oxygenation, the relative risk reduction of severe ROP and laser therapy are associated with SpO_2 technology utilized. This further supports the significance of adequate SpO_2 monitors in managing critically ill infants."