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ORIGINAL ARTICLE

Evidence to modify guidelines for routine retinopathy of prematurity screening to avoid childhood blindness in middle-income countries

Miroslava Paolah Meraz-Gutiérrez[a], Francisco Javier Olguín-Manríquez[b], Andrea Elizabeth Arriola-López[b], David Berrones-Medina[b], Kenneth W. Price[c], Virgilio Morales-Canton[c], María Ana Martínez-Castellanos[b,*]

[a] *Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico*
[b] *Asociación para Evitar la Ceguera en México, Hospital ''Dr. Luis Sánchez Bulnes'' I.A.P., Mexico*
[c] *New York University School of Medicine, United States*

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KEYWORDS
Retinopathy of prematurity;
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Developing countries

Abstract
Objective: Retinopathy of prematurity (ROP), the leading cause of childhood blindness around the world, is potentially avoidable. The incidence of ROP varies between countries due to a variety of factors. The aim of this study is to assess the effectiveness of screening criteria in Mexico valid in March 2015 as an example of a middle-income country.
Methods: The medical records of 261 patients from a single center covering a period of 42 months (October 2011–March 2015) were retrospectively analyzed to identify infants with ROP that did not fall within screening criteria set forth by regional health authorities.
Results: Of the 261 infants in our study group, 55 (21.1%) weighed more than 1500 g (ranging from 466 to 2910), 129 (49.4%) had a GA >30 weeks (ranging from 22 to 36), and 47 (18%) patients presented both. Overall, the mean birth weight for infants with ROP was 1270.6 ± 365.3 g. The mean gestational age was 30.4 ± 2.3 weeks. Following actual AAO/AAP guidelines for ROP screening, 17 infants (6.5%) in our study group would have gone undiagnosed.
Conclusions: These findings show that the valid guidelines at the time of the screening were based on a different population and were not sufficient to detect all ROP cases in a middle-income country. With the update of the Mexican guidelines established in July 2015, the patients from this study would have been screened. Therefore, review and modification of the current

* Corresponding autor at: Retina Service, Asociación para Evitar la Ceguera Hospital ''Luis Sánchez Bulnes'' I.A.P., Vicente Garcia Torres No. 46 Coyoacán, 04030 México, D.F., Mexico. Tel.: +52 5510841400x1171.
E-mail address: mamc@dr.com (M.A. Martínez-Castellanos).

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screening guidelines in other middle-income countries should be considered to include all babies at risk for ROP.

PALABRAS CLAVE
Retinopatía del prematuro;
Ceguera;
Unidad de cuidados intensivos neonatales;
Oxígeno;
Países emergentes

Evidencia para modificar las guías de tamizaje de retinopatía del prematuro para prevenir ceguera infantil en países emergentes

Resumen
Objetivo: La retinopatía del prematuro (ROP), la principal causa de ceguera infantil del mundo, es potencialmente prevenible. La incidencia de ROP varía entre países debido a múltiples factores. El propósito de este estudio es analizar la efectividad de las guías de tamizaje vigentes en México durante marzo de 2015 como país en vías de desarrollo.
Métodos: Los expedientes de 261 pacientes de un único centro, cubriendo un periodo de 42 meses (octubre 2011–marzo 2015), fueron analizados identificando pacientes con ROP que no entraban en los criterios de tamizaje establecidos por las autoridades de salud.
Resultados: De los 261 lactantes del estudio, 55 pacientes (21.1%) pesaron más de 1,500 g (intervalo de 466–2910), 129 (49.4%) tuvieron una edad gestacional mayor a 30 semanas al nacer (intervalo de 22–36) y 47 (18%) presentaron ambos. El peso promedio de los pacientes con ROP fue de 1,270 ± 365.3 g. La edad gestacional al nacimiento fue de 30.4 ± 2.3 semanas. Siguiendo las guías de tamizaje de la AAO/AAP, 17 pacientes (6.5%) del estudio no hubieran sido diagnosticados.
Conclusiones: Estos hallazgos demuestran que las guías de tamizaje vigentes en México durante el estudio estaban basadas en una población diferente y no eran suficientes para detectar todos los casos de ROP. Con la actualización de las guías mexicanas en julio 2015, esta población sí hubiera estado cubierta, por lo que la revisión y modificación de estas guías en otros países emergentes debe ser considerada para incluir a todos los bebés en riesgo de presentar ROP.

Introduction

Retinopathy of prematurity (ROP) is a serious condition found in newborns and is characterized by abnormal vascular growth in the immature retina. This abnormal vessel development can lead to blindness in severe cases. It is now widely recognized that ROP is the leading cause of childhood blindness.[1] As neonatal mortality around the world decreases, ROP is no longer seen only in the most developed countries. Developing countries are now seeing a spike in ROP prevalence often referred to as the ''third epidemic,'' due to the higher premature birth rates, decreased access to neonatal resources, and possibly due to lack of awareness or training of healthcare professionals.[2,3] Of the estimated 50,000 children to have ROP, over half are located within Latin America.[1,2,4] The main risk factors for developing ROP are inherent to premature infants, namely gestational age (GA) and birth weight (BW).[1,5] Both of these have been accepted as the two most important risk factors for developing ROP. However, continued monitoring has helped us to understand that other risk factors play an important role in ROP development including artificial ventilation, sepsis, necrotizing enterocolitis, postnatal glucocorticoids, and cardiopathy.[6–8]

Due to the subclinical nature of ROP, the diagnosis can be missed during the initial hospital stay. This can be detrimental to the child mainly because early detection and treatment is vital to avoid blindness in serious cases. As such, screening guidelines have been put into place across the globe to help detect and treat this disease early. This is especially relevant to middle-income countries as the rate of premature infant survival is rapidly improving, followed closely by an increase in ROP prevalence.[1,2,9] Mexico, a middle-income country, has witnessed this increase first hand. Even with national screening guidelines, ROP continues to be the leading cause of childhood blindness in Mexico.[4,10] The criteria that most institutions in Mexico recognize and follow was released by the American Academy of Pediatrics and the American Academy of Ophthalmology in 1990 and revised in 1995, 2008 and 2013.[11] These guidelines state that any infant of GA of less than 30 weeks or with BW of less than 1500 g should be screened. The 2013 revision also included select infants with BW 1500 g and GA greater than 30 weeks with an unstable clinical course that should be screened. This includes infants who are on cardiorespiratory support or at high risk for developing ROP according to the neonatologist.[11] However, the use of these guidelines is meant for developed countries with excellent