

Intraretinal hemorrhages in newborns: Incidence and associated factors

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Summary

Purpose: To determine the incidence of intraretinal hemorrhage in newborns at the *Hospital de San José*, Bogotá, Colombia from September 2009 to September 2010.

Design: Cohort study.

Methodology: Live newborns were examined at the San José Hospital for a year (September 2009 to 2010), analyzing neonatal and maternal factors associated with the presence of intraretinal hemorrhages. A simple random cluster sampling was used, excluding newborns with a compromised general status, as well as those whose parents or legal guardians did not sign the informed consent form. Patients with the presence of intraretinal hemorrhages were examined every 2 weeks until resolution was observed.

Results: A total of 190 newborns were examined, finding an incidence of intraretinal hemorrhages of 22.6% (95% CI 16.6 to 28.6). Most of the mothers were nulliparous (55.8%) and deliveries were eutocic (65.1%). From newborns with hemorrhages, 81.3% were born at term, and hemorrhages in most patients (93.0%) were resolved by the second week of monitoring.

Associations between hemorrhages and cesarean section (RR 0.42, CI 0.22 to 0.79) and episiotomy (RR 1.73, CI 1.02 to 2.94) were observed.

Conclusions: Newborns who presented intraretinal hemorrhages were children of nulliparous mothers on whom episiotomy was performed, and some with eutocic and instrumented

deliveries. The first two variables had statistical significance for the development of intraretinal hemorrhages.

Keywords: Intraretinal hemorrhages, newborns, neonatal, maternal.

INTRODUCTION

Hemorrhages in newborns related to pregnancy labor are localized at the intraretinal level. These hemorrhages are resolved rapidly between the second and eighth week of birth, and usually do not present further health consequences.¹⁻⁵ In contrast, hemorrhages of traumatic origin can be present at preretinal, intraretinal and/or subretinal levels, taking longer to resolve, and may have different health consequences.^{1,3,9,10} It is important to evaluate the distribution and resolution pattern of the hemorrhages to provide a differential diagnosis from hemorrhages caused by retinal vascular diseases, chorioretinal infections or trauma as a consequence of child abuse.

The degree of severity is classified according to the number of hemorrhages per eye: grade I – presence of one or two hemorrhages; grade II – 3 to 10 hemorrhages and grade III – more than 10 hemorrhages. Severity can also be classified by their ocular location: extramacular and macular, with the later considered as more severe due to later visual implications.^{2,6-8}

Since intraretinal hemorrhages in newborns were reported 48 years ago,^{2,4,9} it has been associated with pregnancy labor. The incidence of hemorrhages varies widely within a range of 2.6% to 50.0%.^{1-2,4,9-15} The wide range of incidence may be due to several factors such as the length of time between birth and the newborn's first ophthalmological exam, examiner's experience, fetal or maternal biometric factors, or systemic diseases in the neonate.^{2,4} Also, the type of delivery affects the incidence of hemorrhages, with a higher incidence when vacuum extraction (ventouse) is used (38.0% to 77.8%), followed by vaginal eutocic delivery (10.5% to 41.0%), the use of forceps (13.0% to 16.0%). The lowest incidence is found after cesarean delivery (6.7% to 7.0%).^{1,2,4,5,9,14,16-18}

Contradictory results, such as maternal age, parity, pharmacological labor induction, performance of an

episiotomy, APGAR score and cephalic perimeter¹⁻¹⁹ have been reported as possible additional factors associated with the appearance of intraretinal hemorrhages in the neonate.

Currently, in Colombia, there are no studies describing the incidence of intraretinal hemorrhages in newborns.

The aim of the present study was to determine the incidence of and the relationship between maternal and or fetal factors on intraretinal hemorrhages in newborns.

MATERIALS AND METHODS

A cohort study of data from a sample size of 190 newborns was evaluated by a simple random cluster sample. Each cluster corresponds to the number of daily births, using the birth information for 2008 (n=4668) with an intraretinal hemorrhage incidence of 42.0%, for a total of 23 days collection and a standard error of $\pm 0.2\%$.

Newborns at the *Hospital de San José*, with prior signed authorization by parents or legal guardians, regardless of gestational age, type of delivery, and without neonatal diseases as determined by the pediatrician, were examined within 48 h of birth between September 2009 and September 2010.

The exclusion criteria for the study group were live newborns whose general systemic condition did not permit manipulation for pupillary clinical exam, and when parents or legal guardians did not sign the consent form.