ORIGINAL

Retinal Haemorrhage in the Newborn

Osama Badeeb, FRCS(C)*
Hassan Abduljabbar, MD,FRCS(C)**
Emel Basher, MD*

ABSTRACT

Retinal haemorrhage in the newborn is a well documented observation. In order to determine the frequency of occurrence and to investigate the association with various factors, the retinae of 50 newborns were examined within the first 24 hours after delivery at King Abdulaziz University Hospital, Jeddah, Saudi Arabia. The examining ophthalmologist was unaware of the course and management of labor and delivery. Relevant clinical details were taken from the patient's charts, coded and entered into a microcomputer. The results of the analysis revealed that 40% of the 50 newborns examined (N=20), were found to have retinal haemorrhage. Eight newborns delivered by cesarean section, none of which had retinal haemorrhage, were excluded from the study. Forty-two newborns delivered vaginally were divided into two groups; group 1 (N=22) who had a normal retina, and group 2 (N=20) who had retinal haemorrhage. Several factors were examined for association of occurrence of retinal haemorrhage using comparison between means and frequency of occurrence in each group. None of the factors examined were found to have any association in the development of retinal haemorrhage.

As early as 1861, Jaeger has been credited as the first clinicial to report retinal haemorrhage in the newborn.[1] Many investigations have since studied the fundi of newborn infants in an attempt to determine the incidence, aetiology and significance of retinal haemorrhage. Retinal haemorrhage is a well documented observation with an incidence of 2.6% - 59%. This wide range was dependent on the time of fundal examination.[1-5]

The purpose of this paper is to determine the frequency of occurrence of retinal haemorrhage in newborn infants, and to investigate if an association exists between various factors and the occurrence of retinal haemorrhage in a group of newborn infants delivered at King Abdulaziz University hospital, Jeddah, Saudi Arabia.

METHODS

In a prospective study, fifty newborn infants were randomly selected from two hundred babies delivered in the month of October 1989 at King Abdulaziz University Hospital, Jeddah, Saudi Arabia (every fourth newborn baby). Retinal examination by means of an indirect ophthalmoscope was performed within the first twenty-four hours following delivery. The pupils were dilated with Cyclopentolate 0.5% and phenylephrine 2.5% twice in each eye, one half an hour prior to the examination.

* Department of Ophthalmology
**Department of Obstetrics and Gynaecology
College of Medicine
Abdulaziz University
Jeddah, Saudi Arabia

The ophthalmologist was unaware of the course and management of labour and delivery. Clinical details including age, gravidity, gestational age, duration of labour, mode of delivery, birth weight and sex, were taken from the patients' charts, coded and entered into a microcomputer for later analysis.

Newborns whose fundi were found to have retinal haemorrhage were examined at two-weekly and thereafter four-weekly intervals until the retinal haemorrhage disappeared.

Twenty out of fifty newborns (40%) were found to have retinal haemorrhage. Eight newborns delivered by cesarean section, none of which had retinal haemorrhage, were excluded from the analysis. Forty-two newborns delivered by vaginal delivery were divided into two groups; group 1 included those who had a normal retina, and group 2 included those who showed evidence of retinal haemorrhage.

The means of four continuous variables; age in years, gravidity, duration of labour in minutes, and birth weight in grams, were compared in the two groups, using the t-test.

Ten varibales (maternal age of less than 20 and more than 35 years; gravida 1,2-4, and more than 4; induced patients; sex of the newborns; duration of labour for more than 8 hours; birth weight of less than 2,500 g; gestational age of less than 37 weeks) were examined for frequency of occurrence with retinal haemorrhage. Statistical significance of the difference between the two groups was tested by the Chi-square test with Yates' correction ($p<0.05$).

RESULTS

A total of fifty newborns were studied, of which twenty showed evidence of retinal haemorrhage. Eight newborns who were delivered by elective cesarean section and had a completely normal retina, were excluded from the analysis.

Table 1 shows the four continuous variables; maternal age in years, gravidity, duration of labour in minutes, and the birth weight in grams. No statistically significant difference was found between the mean of each variable in the two groups.

DISCUSSION

Retinal haemorrhage of the newborn is a fairly common condition. In the present study, 40% of the newborns examined were found to have retinal haemorrhage, which was in the range of the incidence reported in the literature, 2.6%-59%.[1]

The aetiology of retinal haemorrhage in the newborn is unknown, but it has been suggested to be due to congestion of the retinal veins resulting from increased intracranial pressure brought about by the process of labour.[2] It has been suggested that the mechanism of retinal haemorrhage is a result of changes in the intracranial venous pressure which occurs during the passage of the fetus into the birth canal, and the sudden decompression of the fetal head at delivery.[4]

A recent finding suggested that the prostaglandin released during amniotomy passed through the placenta to the fetal retina causing a breakdown of the retinal vessels and retinal haemorrhage.[4]

The mode of delivery appears to be an important risk factor for developing retinal haemorrhage as none of the newborns delivered by elective cesarean section showed any evidence of retinal haemorrhage. Therefore, one could conclude that there is an association between labour itself and the occurrence of retinal haemorrhage reported in other studies.[3,4]

Primigravida were reported to have a higher incidence of retinal haemorrhage among their newborns.[1,3] In this study, no statistical significant difference was found between the means of gravidity in the two groups who

Table 1
Comparison between the four continuous variables between the two groups of newborns

Variable	*Group 1 (Newborns with normal retina) N = 22*		*Group 2 (Newborns with retinal haemorrhage) N = 20*		P *Value*
	Mean ± SD	*Range*	*Mean ± SD*	*Range*	
Mean age (years)	26.96 ± 5.85	(17-40)	26.45 ± 6.26	(18-38)	0.79
Gravidity	3.82 ± 2.53	(1-10)	3.60 ± 2.37	(1-8)	0.78
Duration (minutes)	362.5 ± 265.8	(96-100)	482.7 ± 316.9	(71-1400)	0.19
Birth weight (grams)	3220.7± 513.2	(2120-4450)	3057.0 ± 446.1	(2210-4100)	0.28

developed retinal haemorrhage and those who did not, and in the frequency of occurrence of retinal haemorrhage in the primigravidas.

The association of fetal head compression pressure and the development of retinal haemorrhage were studied by Svenningsen et al., however, there was no association between haemorrhage and high or low pressure.[6]

In most cases, absorption takes place within 2-3 weeks, leaving no sequelae.[3] However in few cases damage to the macula may be responsible for the development of amblyopia and squints.[5] Follow-up of our newborns for a period of up to three months revealed that none of them developed any sequelae.

CONCLUSION

In conclusion, we found 40% of the newborns studied had retinal haemorrhage. None of the factors we studied could predict the occurrence of retinal haemorrhage, except for the mode of delivery. Further studies are required to evaluate the effect of labour itself.

REFERENCES

1. Giles CL. Retinal haemorrhages in the newborn. Am J Ophthalmol 1960;49:1005-11.

2. Kauffman ML. Retinal haemorrhages in the newborn. Am J Ophthalmol 1959;46:658-60.

3. Levin S, Janive J, Mintz M, et al. Diagnostic and prognostic value of retinal haemorrhages in the neonate. Obstet Gynaecol 1980;55:309-14.

4. Schoenfeld A, Bukeman G, Nissenkorn I, Cohen S, Ben-Sira I, Ovadia J. Retinal haemorrhages in the newborn following labor induced by oxytocin and dinoprostane. Arch Ophthalmol 1985;103:932-4.

5. Duke-Elder. System of Ophthalmology. Injuries Part 1. Vol. XIV. London:Henry Kimpton, 1972:12-13.

6. Svenningsen L, Lindemann R, Eidal K. Measurement of fetal head compression pressure during bearing down and their relationship to the condition of the newborn. Acta Obstet Gynecol Scan 1988;67:129-33.