RETINAL HAEMORRHAGES IN THE NEW BORN

(Part II)

by

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There has been a great deal of speculation as regards the etiology and significance of retinal haemorrhages in the newborn. The authors in their previous study (Jain and Gupta, 1965) reported the incidence and influence of various factors in its causation. It was concluded from that study that the only significant factor in the pathogenesis of retinal haemorrhages was venous congestion in the central retinal vein due to increased intracranial pressure during the passage of the head through the birth canal. Incidence as high as 75% was recorded in cases where the head was delayed on the perineum as compared to an overall incidence of 27.63%. From the above reported observation it was surmised that there should be a significant difference in the incidence of retinal haemorrhages in the newborns, delivered by elective caesarean section and those delivered vaginally. The incidence should be greater still in cases where vaginal delivery was difficult.

To substantiate these views, we further studied the incidence of retinal haemorrhage in operative deliveries.

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Received for publication on 30-1-1971.

Material and Methods

This study was conducted on 100 newborns delivered either by forceps or by caesarean section in 1969-1970 in Nehru Hospital, and Institute of Postgraduate Medical Education and Research, Chandigarh. All the infants were examined within 20 hours after birth. Each eye was examined opthalmoscopically as well as externally. The pupil was dilated either by 1% homatropine or phenylnephrine 10% instilled once only. No anaesthesia was found necessary.

Those infants who showed retinal haemorrhages were followed every day until the disappearance of retinal haemorrhages.

The details of the exact nature of the operative delivery, duration of 2nd stage of labour and the presence of caput and moulding of the head were carefully recorded.

Observations

Out of these 100 newborns, 42 were delivered by lower segment caesarean section and 58 were delivered by forceps. Twenty-five of the forceps deliveries were low mid-cavity whereas in five cases Kielland forceps was used for rotation and extraction of the head.

Incidence

Retinal haemorrhages were noted in eleven of these 100 new-borns (i.e. 11%).

The incidence in caesarean section babies was 4.76% as compared to 15.9% in the forcep delivery cases. Further it is clear from the Table I that the incidence is significantly ($p < .01$) more in mid cavity forceps deliveries as compared to low forceps i.e. 29.17% and 5.88% respectively. (Table I).

The grading of retinal haemorrhages into mild, moderate and severe was done as reported earlier (Jain and Gupta, 1965) and it was noted as shown in the following Table II.

The haemorrhage was mild in majority of cases but the moderate variety was noted in 3 cases of mid-cavity forceps where Keilland forceps was used for rotation and extraction of the head. Retinal haemorrhages were only seen in two cases of caesarean section where the indication was placental insufficiency in one and cephalopelvic disproportion with failed trial of labour of more than 24 hours duration in the other case.

The duration of second stage of labour in positive cases delivered by forceps is shown in Table III.

Table IV shows that in all the three

TABLE I

Incidence

No. of cases of retinal haemorrhage	L. segment caesarean. section	Mid-cavity forceps	Low forceps
Positive ..	2 (4.76%)	7 (29.17%)	2 (5.88%)
Negative	40 (95.24%)	17 (70.83%)	32 (94.12%)
TOTAL ..	42	24	34

TABLE II

Degree of Haemorrhage

Degree of haemorrhage	Caesarean section	Midcavity forceps	Low forceps
Mild ..	2	4	2
Moderate ..	Nil	3	Nil
Severe ..	Nil	Nil	Nil

TABLE III

Duration of Second Stage on Positive Cases

No. of positive cases in forceps deliveries	Less than 1 hour.	1–2 hours	More than 2 hours.
7	1	5	1

TABLE IV

Caput and Moulding in cases of Retinal Haemorrhage

Retinal haemorrhage	Moulding & Caput +	Caput & Moulding ++	Total No. of cases
Positive	4	2	6(11) i.e. 54.5%
Negative	6	1	7(89) i.e. 8.9%

cases of retinal haemorrhage of moderate degree, caput and moulding was excessive i.e++.

Discussion

The first act of respiration (Koenigestein, 1881) and increased blood pressure due to obstruction of foetal circulation (Buchanan, 1903 and Wolff, 1907) have been considered as the etiological factors. But these can be discounted from the fact that none of our 10 caesarean section babies in our previous study (1965) and only two out of 42 such babies in the present study showed retinal haemorrhage. In one out of these two positive cases, labour was well advanced and caesarean section was done for failed trial of labour in a case of cephalopelvic disproportion. This paucity or absence of retinal haemorrhage in the newborns delivered by caesarean section suggests that the causative factor must lie in the process of delivery of the baby through the birth canal. In our previous study (Jain and Gupta, 1965), retinal haemorrhages were noted in 75% of cases where the head was allowed to stay on the perineum for more than half an hour, as compared to the overall incidence of 29.2% where the perineal stage was less than 15 minutes.

It was considered that the statistically significant difference in cases where forceps and/or episiotomy was delayed resulted in greater rise in intracranial pressure, causing congestion of the central vein of retina which drains into the cavernous sinus in the majority of cases. The observation that the incidence was 5.88% in the low forceps deliveries as compared to 29.17% in mid-forceps, lends further support to this view. Moderate to severe degree of haemorrhage occurred only in 3 cases where forceps rotation and extraction of the head was done by Keilland's forceps.

The presence of caput and moulding in 54.5% of positive cases as compared to 8.9% of negative cases and second stage of labour being prolonged more than one hour lends further support to this view.

Summary and Conslusions

1. The probable cause of retinal haemorrhages in the newborns is the obstruction to the flow of blood from central vein of retina, as a result of increased intracranial pressure.

2. The incidence of retinal haemorrhage is related to degree of moulding, caput formation, duration of second stage of labour and mode of delivery.

3. Very little difference in the incidence between low forceps and caesarean section deliveries further supports the value of prophylactic outlet forceps as a method of delivery.

4. The long term effects of these ocular changes require further study to evaluate this as a sign of birth trauma to the central nervous system.

References

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