

OBSTETRICAL FACTORS IN RELATION TO NEONATAL ASPHYXIA

by

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Introduction

There is no greater field where obstetrical problems so influence the mortality and morbidity of the baby. Infact, the problem of neonatal asphyxia is multi-facet, wherein many specialists are involved: first the obstetrician who prevents it to a great extent by proper antepartum and intrapartum care; the anaesthetist, who resuscitates immediately and the neonatologist who takes over the baby. Outcome of these babies is variable, as some of them die, some live entirely a normal life, while unfortunate ones remain as a "handicapped child".

In this study, an attempt has been made to relate these factors to the ultimate outcome of the babies.

Material and Methods

This study was carried out at the L.T.M.G. Hospital, Sion over a period of 1 year where the total number of deliveries were 5096. Totally 181 babies deve-

loped asphyxia, and 85 of these babies were studied. All the deliveries were attended by a senior pediatrician. The Apgar score in these babies at 0 and 5 minutes was recorded. The babies were resuscitated depending on the severity of asphyxia. Those requiring respirator care were transferred to Intensive Paediatric Care Unit of the Hospital. A neurological examination was carried out on admission to the Intensive Paediatric Care Unit or in the Nursery and on discharge. The babies who recovered were followed up regularly every fortnight at a special clinic. On follow-up, babies were grouped into normal, moderately retarded or severely retarded, depending on the developmental assesment.

Observations

Table I shows that out of the total of 5096 deliveries, 181 babies developed

TABLE I
No. of Deliveries Vs. Mortality and Morbidity

Type of Delivery	No. of Babies	No. of Asphyxiated Babies	%
Normal	4,472	43	96
L.S.C.S.	137	19	13.86
Breech	90	17	18.88
Forceps	46	6	13.04
Premature	351	96	27.35
Total	5,096	181	3.8

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asphyxia giving incidence of 2.5%. Of these 4472 deliveries were normal, 43 of these normal deliveries (0.96%) developed asphyxia. Asphyxia was seen in 27.35% of pre-term babies. Of the abnormal deliveries asphyxia was most common in babies delivered by breech.

It is seen from Table II that 51.6% of babies with asphyxia had normal de-

and prolonged second stage of labour in 30% of cases. Of 13 babies, whose mothers had toxemia, 2 expired, 7 were abnormal at discharge or on follow-up. Of the 12 babies who were delivered after prolonged II stage of labour, 4 expired, 4 were abnormal on discharge and follow-up.

Table IV shows that 20 babies had

TABLE II
Type of Delivery/Mortality and Morbidity

Type of Delivery	Total No. of Pts.	Expired		Follow-up			
		No.	%	Total	Normal	Mod.	Severe
Normal	43	9	20	24	17	3	4
L.S.C.S.	19	2	10.5	8	6	1	1
Breech	17	5	29.4	5	3	—	2
Forceps	6	3	50	2	1	1	—

liveries. 24.4% were breech deliveries, 22.87% were delivered by L.S.C.S. and 7.2% were by forceps application. Mortality was maximum in babies delivered by forceps.

As seen in Table III, 38 of the 85 mothers had some obstetrical or medical complications.

The commonest maternal complication was toxemia seen in 32.57% of mothers

some foetal complication. Twelve had foetal distress, 7 had meconium aspiration and 1 baby had cord around the neck. Of the 7 babies with meconium aspiration, 3 expired, 3 babies were abnormal on follow-up of which 1 was severely retarded. Of the 12 babies with foetal distress, 1 expired, 3 were abnormal on discharge, 2 were moderately and 1 was severely retarded.

TABLE III
Maternal Complications/Morbidity and Mortality

Maternal Complications	Total No. of Pts.	Expired		Follow up			
		No.	%	Total	Normal	Mod.	Severe
Toxaemia	13	2	15.4	4	1	2	1
Syphilis	2	1	50	—	—	—	—
Threatened rupture	1	—	—	—	—	—	—
Heart disease	2	1	50	—	—	—	—
P.R.O.M.	4	1	25	1	—	—	—
A.P.H.	2	—	—	1	1	—	—
Prolonged 2nd Stage	12	4	33.3	5	3	1	1
C.P.D.	2	—	—	1	1	—	—
Total	38	9					

TABLE IV
Foetal Complications

Foetal complications	Total No.	Expired		Not Followed Up		Follow up		
		No.	%	Normal at (D)	Abnormal at (D)	Normal	Mod.	Severe
Foetal Distress	12	1	—	1	3	4	2	1
Meconium aspiration	7	3	—	—	2	1	—	1
Cord strangulation	1	—	—	1	—	—	—	—
Total	20	4	—	2	5	5	2	2

TABLE V
Apgar at Birth

Apgar Score	Total No.	Expired		Follow up		
		No.	%	Normal	Abnormal	Severe
0-2	33	13	39.3	8	9	3
3-6	52	6	11.5	35	7	4
Apgar at 5 minutes						
0-2	12	4	33.3	1	4	3
3-6	38	13	34.2	12	10	3
7-10	35	2	5.7	30	2	1

Table V shows that 39.6% of babies had an Apgar of 0-2 at birth, 62.4% had an Apgar of 3-6. Mortality was significantly higher in babies with lower Apgar score. The morbidity, however was not influenced by Apgar at birth. Twelve babies continued to have an Apgar score between 0-2 at 5 minutes after birth, 1/3rd of these babies expired, 1/3rd were abnormal at discharge but were not followed-up and 3 babies were severely retarded. Thirty-eight babies had an Apgar of between 3-6, of which 13 babies were abnormal on discharge or follow-up, 5 were moderately retarded and 3 were severely retarded. Of the 35 babies, whose Apgar were 7-10 after 5 minutes, only 2 babies expired, 2 were abnormal on discharge and only 1 baby

was severely retarded. Morbidity and mortality decreases with higher score of Apgar at 5 minutes.

It is seen in Table VI that 6 babies died primarily of asphyxia, 6 of septicemia, 2 of R.D.S. Septicemia was more commonly seen in babies on prolonged I.P.P.R.

TABLE VI
Causes of Death

Causes of Death	No. of cases	%
Asphyxia	6	31.21
Septicaemia	6	21.21
R.D.S.	2	10.4
D.I.C.	1	5.2
Not known	4	20.8
Total	19	22.3

Discussion

The problem of birth asphyxia is sufficiently high to emphasise the need of adequate obstetrical methods to diagnose foetal distress and efficient resuscitation facilities in every labour room.

The incidence of asphyxia in our series is 3.5% and compares well with the study of Singh and Kaltra (1978). Moltono *et al* and Kapoor *et al* (1970) have reported a higher incidence i.e. 6.7% and 6.3% respectively. This incidence would obviously be higher in high-risk pregnancies.

The maternal factors that influence the incidence of asphyxia are the age and parity of the mother, the type of delivery and maternal complications. The incidence seems to be higher in mothers whose age is less than 20 and above 35 years.

40% of the mothers whose babies developed asphyxia were primigravidas. Although the incidence is higher in breech deliveries and babies delivered by L.S.C.S., 51.6% of babies who had asphyxia were born of normal delivery, which justifies monitoring of all the deliveries.

Of the maternal complications, toxæmia and prolonged second stage were more often associated with higher incidence. The mortality and morbidity of these babies were also high.

Not all babies with foetal distress developed asphyxia. Twelve of overasphyxiated babies had foetal distress. These babies had higher degree of mortality and morbidity.

The gestational age and weight of the baby influences the mortality and morbidity to a great extent. 45% of the asphyxiated babies were preterm and 67% were less than 2.5 kg. and 40% were less than 2.0 kg. These are the babies in whom special care should be instituted if they are to survive.

The problem that was often encountered in babies whose Apgar score did not improve with time was the maintainance of I.P.P.R. It was difficult to wean off the babies from the respirators and pulmonary infection was more common in these babies.

Our mortality was 20.3%. Singh and Kaltra (1978) had a mortality of 32.6%. Scott (1976) and Molteno *et al* (1974) have reported 52% and 13.1% neonatal mortality following severe birth asphyxia respectively.

A majority of babies succumbed within the first 48 hours, those who survived for more than 3 days, usually died of infection. This emphasizes the need for expert pediatric care within the first 48 hours of birth.

References

1. Kapoor, S., Mammen, K. G., Mathew, K. C. and Kumar, G.: *Indian Pediat.* 7: 276, 1970.
2. Molteno, C. D., Malan, A. F. and Heese, H. D. V.: *South Afr. Med. J.* 48: 2259, 1974.
3. Scott, H.: *Arch. Dis. Childh.* 51: 712, 1976.
4. Singh, M. and Kalra, V.: *Indian Pediatr.* 15: 10, 835, 1978.