

SIGNIFICANCE OF MECONIUM STAINING OF AMNIOTIC FLUID IN LABOUR

By

PRAVIN GOUD AND USHA KRISHNA

SUMMARY

Meconium staining of liquor still remains a significant clinical finding. Of 1726 deliveries, 9.59% had meconium staining and 30.9% of them were thickly meconium stained. 78.4% of these patients who had thick meconium stained liquor had associated maternal factors such as hypertension, anaemia, A.P.H. and prolonged labour. 54% of the babies required neonatal intensive care and 17.6% did not survive. This study therefore acknowledges the importance of thick meconium staining and the value of intensive monitoring in these patients.

Introduction

A careful intrapartum surveillance can prevent most of the perinatal morbidity as well as mortality. Although intrapartum cardiotocography and scalp blood pH are very useful methods of assessing foetal hypoxia during labour, these methods are not available to even a small fraction of patients delivering in our country. It is therefore necessary to re-examine the importance of clinical methods and apply them to judge the foetal hypoxia and prevent its long term sequelae. In this study, we present our experience with 1726 cases which were observed for meconium staining.

Material and Methods

One thousand seven hundred and twenty six deliveries with singleton pregnancy with cephalic presentation were studied at KEM

*From: Dept. of Obstetrics and Gynaecology,
K.E.M. Hospital Parel, Bombay.*

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Hospital, Bombay, between December 1987 to May 1988. The colour of liquor was noted at the time of amniotomy or spontaneous rupture of membranes and at the time of delivery. Maternal age, parity, length of gestation and associated complications like toxemia, anaemia etc. were noted. The patients were monitored clinically during labour. Depending on the progress of labour, signs of hypoxia and other obstetric factors, time and mode of delivery were determined. The pregnancy outcome was studied in terms of birth weight, one and five minute Apgar Score, gestational age, respiratory distress and requirement of resuscitation. The neonate was followed up for a period of seven days and its behaviour during this period was noted for early neonatal morbidity.

Results

One hundred and sixty-five cases of meconium stained liquor were noted giving an incidence of 9.59%. Out of these 51

(30.9%) cases belonged to 'thickly stained' group; 74 (44.8%) to 'thinly stained' group and 40 (24.2%) to 'moderately stained' group. One hundred twenty-two patients were gestationally 37 to 40 weeks. The incidence of postmaturity was 10.3% in the 'total stained' group and 13.52% in the 'thickly stained' group.

Out of the total 165 meconium stained cases, 85 had no maternal pathology. Of the remaining 80 cases, 26 had hypertension during pregnancy, 35 had anaemia, 2 had accidental haemorrhage and 17 had prolonged labour. Thus the contribution of maternal factors was 78.4%, 62.5% and 20.27% in the thick, moderate and thinly stained cases respectively.

Among the foetal factors, incidence of cord complications was as follows: 5 cases had short umbilical cord (3.2%), 1 had cord presentation (0.6%) and 15 had loops of cord around the neck (9.69%). There was no case with true knot of the cord.

Majority of the babies weighed 2.5 to 3 kg., 4.2% babies weighed more than 3.5 kg. Among the 'thickly stained group foetal heart decelerations were clinically detected in 37.25% of cases. In the 'thinly' and 'moderately' stained group they were pre-

sent only in 6.75% and 7.5% cases respectively. Thus foetal heart decelerations were noted clinically in 16.36% of the total stained cases. Electronic foetal heart monitoring however could be done only in 21 cases with thick and moderate staining. 7 out of these showed significant late deceleration pattern.

The mode of delivery in the thin and moderately stained group was similar to the unstained group.

The total stained group had only slightly higher (7.7%) caesarean rate than the control group (6.44%). The thickly stained group did have a significantly higher caesarean rate (21.56%) which was three times higher than the control group.

In the thin and moderately stained group there were no patients with very low (less than 6) Apgar Score at one and five minutes. In the thickly stained group 9 babies (17.6%) had low Apgar at one minute (less than 6) and 4 babies had low Apgar at five minutes.

28 babies with thickly meconium stained liquor were admitted in the neonatal intensive care unit out of which 8 babies died. 8 babies in the thinly stained group and 7 in the moderately stained group required N.I.C.U. admission. (Table III).

TABLE I
Associated Maternal Pathologies

	Total	Maternal factors		HDP	Anaemia	APH	Prolonged labour
		No.	%				
Thick	51	40	78.4	13 (25.52%)	15 (29.4%)	1 (1.96%)	11 (21.56%)
Mod.	40	25	62.5	8 (20%)	12 (30%)	1 (2.5%)	4 (10%)
Thin	75	15	20.27	5 (6.75%)	8 (10.8%)	0 --	2 (2.7%)
Total	165	80	48.4	26	35	2	17

TABLE II
Mode of Delivery

Type of Delivery	Thin	Moderate	Thick	Total	Control %
Normal	64 (86.48%)	38	34 (66.6%)	136 (87%)	81.93
Vacuum	4 (5.4%)	2 (5%)	3 (3.92%)	9 (5.8%)	2.21
Forceps	3 (4.05%)	0	4 (7.84%)	7	3.21
L.S.C.S.	1 (1.35%)	0	11 (21.56%)	12 (7.7%)	6.44
Face Presentation	2	0	0	2	0.38

TABLE III
Neonatal Morbidity and Mortality

Nature of Liquor	N.I.C.U. Adm.	Neonatal Death
Thin	8	2
Moderate	7	2
Thick	28 (54.6%)	8 (17.6%)

The neonatal mortality in the stained group was 7.26% being very significant in the thickly stained group (17.6%). This also constituted 14.28% of the total number of neonatal deaths. The neonatal mortality was 4.62% in the unstained or the control group.

Discussion

Various authors have found incidence of meconium staining of amniotic fluid between 9 to 22%. Resnick *et al* (1955) found it to be 9.9% in their series of 767 cases. Douglas Johnson in 1501 cases found the incidence to be 18% (1968). Another large series from Pittsburgh analysed 42,000 cases where incidence of meconium staining was 10.3%. (Toshio Fujikara *et al*, 1975). The present series shows a similar (9.59%) incidence thus proving that the incidence of meconium staining has not changed over the years.

No association between advanced maternal age and meconium passage could be found in the present study. Prolonged pregnancy was one of the important factors. Present study has shown the incidence of postmaturity to be 10.3%. Hellman and Kohl (1958) and Resnick (1955) found it to be 12.3% and 11.2% respectively. Incidence of meconium staining was also higher in the babies weighing more than 3500 gms and lower in the preterm babies (3.63%). This finding supports the disproportionately low occurrence of meconium in preterm babies. This might be either due to smaller accumulation of meconium in the intestines or lower sensitivity to hypoxia. In 30.9% of cases no etiological factor could be found. Table IV analyses the contribution of toxæmia and prolonged labour to passage of meconium before delivery.

TABLE IV
Maternal and Foetal Factors

Investigator	Toxaemia (%)	Prolonged Labour (%)
Paul Meis (1978)	11.2	24.4
Hellman (1958)	8.2	18.1
Toshio Fujikara (1975)	11.2	—
Present series (1988)	15.5	10.3

37.25% of thickly stained cases had clinically detected decelerations in F.H.R. Thick meconium staining therefore needs to be viewed seriously. All cases which are liable to develop foetal hypoxia and have even mild to moderate meconium staining need a close clinical observation and intrapartum electronic monitoring whenever possible. Although the presence of meconium may not indicate severe hypoxia or acidosis it may indicate present or previous episode of intrauterine hypoxia or compensated foetal distress.

of value in selecting the foetus which requires intensive monitoring and timely intervention to avoid foetal death.

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References

1. Hellman, L. M., Schiffer, A. M., Kohl, S. G. and Tollas, E. N.: *Am. J. of Ost Gynaec.* 76: 998 1958
2. Johnson, D.: *Australia and Newzealand J of Obst* 8: 225, 1968.
3. Meis, P. J.: *Marshall Hall III, Marshall. R. J.. and Hobel, C. J.: Am. J. Ozst. Gyn.* 131: 509, 1978.
4. Resnick, L.: *South African Medical Journal*, 29: 857, 1955.
5. Toshio Fujikara and Kliionsky, B.: *Am. J. Obstet. Gynec.* 121: 45, 1975.

Conclusion

Apart from the perinatal loss that may occur in the high risk group, occasionally there is perinatal morbidity or mortality in full term and full sized infants. Whilst meconium staining of liquor is only one of the acknowledged clinical signs of foetal jeopardy, its prompt recognition in the high risk group as well as the normal patients is