Various Maternal Factors Responsible for Meconium Stained Amniotic Fluid

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Summary

Present study was conducted on 1450 live born babies out of 1600 consecutive deliveries in J.L.N. Medical College Hospital, Ajmer from May '98 to Oct. '98 including antepartum & intrapartum cases to evaluate their obstetrical behaviour with reference to age, parity, medical and obstetrical complication and perinatal outcome in form of morbidity & mortality.

The incidence of meconium stained amniotic fluid was 9.37%. Incidence of meconium aspiration was 24%.

Meconium aspiration syndrome developed in 4% of meconium stained amniotic fluid.

8.24% cases of meconium stained amniotic fluid were booked, 12.13% were unbooked.

6.61% of mothers<20yrs., 11.47% between 20-25 yrs., 9.40% between 25-30 yrs. and 3.79% >30yrs. had meconium stained amniotic fluid.

13.18% mothers were primi, 9.25% were second gravida, 8.44% were third gravida and 1.94% were fourth gravida and above.

Meconium stained amniotic fluid seen in majority of cases of PIH & Eclampsia 16.25% and 33.34% respectively, in heart disease 25% cases, in asthma 25%, in anaemia 5.0% cases associated with meconium stained amniotic fluid.

Fetal distress was present in 44.66% of meonium stained amniotic fluid, 74.71% babies with thick meconium consistency had fetal distress, whereas 25.29% of thin consistency showed fetal distress.

Meconium stained amniotic fluid associated with failed progress of labour in 21.5% cases and prolonged rupture of membrane in 28.34% cases.

Meconium stained amniotic fluid associated with perinatal morbidity and mortality. It signifies the need of prevention and treatment of various antepartum and intra partum complications, which were responsible for intra uterine hypoxia and meconium stained amniotic fluid. Hence, various approaches are to be made out to educate and provide various health measures to rural, illiterate, ignorant and poor population so as to raise the health standard of villages and thereby reduce incidence of meconium stained amniotic fluid and perinatal morbidity and mortality.

Introduction

The present study was conducted in 1900 consecutive deliveries from May '98 to Oct. '98 out of which 1600 liveborns were selected. Many maternal factors contribute to passage of meconium before birth which include maternal age, prolonged gestation, type of labour, obesity, anaemia, hypertension, toxaemia of pregnancy and others.

The aim of this study is to find out various factors and complications during labour in cases of

meconium stained amniotic fluid (MSAF).

Material and Method

In this study all cases were monitored clinically, general condition of mother, uterine contraction, fetal movements and fetal heart sound (rate, tone, rhythm) were noted every 15 minutes.

Sequential deliveries were attended at time of birth and categorized into:

ClassI-Non meconium stained amniotic fluid, no. of cases 1450 i.e. 90.63%.
Class II-Meconium stained amniotic fluid, no of cases 150 i.e. 9.37%.
Class II is further categorized in 2 sub groups.
Class II A-Thick: dark green in colour, pea soup consistency with particulate matter.
Class II B-Thin: lightly stained yellow or greenish colour.

Two classes were compared for variables like maternal age, parity, duration of pregnancy, antenatal complications – APH, PIH, eclampsia, heart diseases, severe anaemia, hepatitis and maternal illness.

Intrapartum complications which were noted in 2 classes are:

1. Fetal distress alone
2. Fetal distress with obstructed labour.
3. Fetal distress with failed progress of labour
4. Fetal distress with cord problem (tight loop, cord prolapse, true knots).
5. Prolonged rupture of membranes >24 hours.

Discussion

Meconium is a viscous green liquid that consists of gastrointestinal secretions, bile, bile acids, mucus, pancreatic juice, cellular debris, amniotic fluid and swallowed vernix caseosa, lanugo and blood.

Meconium passage in utero is relatively rare prior to 38 weeks of gestation because of

1. The hormonal control of fetal meconium passage is maturationally dependent. Motilin an intestinal peptide is responsible for bowel peristalsis and defecation.
2. Natural control of meconium passage is dependent on the maturation and myelination of neural plexus of gastrointestinal tract.

Regardless of how meconium reaches liquor amnii there is always a risk of meconium aspiration. Meconium staining of fetus takes 3-4 hours to develop. Passage of meconium in utero has been often used as a marker of ante or intrapartum asphyxia.

Meconium aspiration occurs in utero due to deep and gasping respiration and also due to post partum aspiration. The presence of thick meconium stained amniotic fluid is more likely to result in respiratory symptoms.

Controversies exist regarding the appropriate management of mother delivery room management of meconium stained infant who are clinically ill with meconium aspiration syndrome.

Current data suggests usefulness of amnioinfusion where normal saline infused to uterus dilutes the amniotic fluid or may alleviate cord compression (Sadovsy et al, 1989).

Observations

The results of present study are given in table no. 1 to 6.

Table No. 1
Incidence of meconium stained amniotic fluid

Total	Class I	%	Class II	%
1600	1450	90.63	150	9.37

The incidence reported by Linder et al (1988) 10.4% was comparable to present study.

Table no. II
Relationship of MSAF with booked & unbooked

	Total n=1600	Class I n=1450	Class II n=150
Booked	1130 (70.62%)	1037 (91.75%)	93 (8.25%)
Unbooked	470 (72.37%)	413 (87.87%)	57 (12.13%)

In unbooked cases, this higher incidence is because of delay in referring the cases from rural area and due to poor antenatal care and poor monitoring during labour.

Table no. III
Incidence of MSAF according to maternal age

	Total	Class I	Class II
< 20 year	136 (8.5%)	127 (93.39%)	9 (6.61%)
20-25 year	732 (45.75%)	648 (88.53%)	84 (11.47%)
26-30 year	521 (32.56%)	472 (90.6%)	49 (9.4%)
> 30 year	211 (13.18%)	203 (96.21%)	8 (3.79%)
Total	**1600**	**1450**	**150**

From above table it is observed that maximum

cases of meconium stained fluid is seen in age group 20-25 year, this is statistically significant.

S.K. Sandhu et al (1993) have also reported similar distribution of age group of mother with 80% of cases 21-30 years, 8% cases less than 20 years and 12% more than 30 years of age.

Table IV
Incidence of meconium stained amniotic fluid with parity of mother

	Total	Class I	Class II
Primi	615 (38.45%)	534 (86.82%)	81 (13.18%)
2 delivery	406 (25.37%)	369 (90.88%)	37 (9.22%)
3 delivery	320 (20.0%)	293 (91.56%)	27 (8.44%)
4 delivery or more	259 (16.2%)	254 (98.06%)	05 (1.94%)
	1600	1450	500

p< 0.05

Present study shows a significant incidence of meconium stained ammotic fluid in primi. This may be due to the increased duration of labour in primi as compared to multigravidae.

Table no. V
Relation of Antepartum complication with MSAF

	Total n=1600	Class I n=1450	Class II n=150
APH	55 (3.43%)	53 (96.36%)	02 (3.64%)
PIH	80 (5.0%)	67 (83.75%)	13 (16.25%)
Eclampsia	18 (1.12%)	12 (66.66%)	04 (33.34%)
Heart disease	04 (0.25)	03 (75.0%)	01 (25.0%)
Anaemia	153 (9.5%)	144 (94.1%)	09 (5.9%)
Asthma	04 (0.25%)	03 (75.0%)	01 (25.0%)
Jaundice	11 (0.68%)	09 (81.81%)	02 (18.19%)

p< 0.05

Similar incidence was reported by Narang et al (1993) in their study, significant incidence of meconium stained amniotic fluid found in primi out of total 338 cases of meconium stained amniotic fluid 136 cases (57.14%) were primi and 42.86% were multigravidae.

In present study pregnancy induced hypertension is main antepartum complication leading to higher incidence of meconium stained amniotic fluid.

In our study antepartum complication statistically significantly associated with meconium stained amniotic fluid because all above factors lead to placental insufficiency and intrauterine fetal hypoxia which were responsible for passage of meconium.

Thus, preventing antepartum complication by providing good antenatal care and early detection of antepartum complication and treating them we can reduce the incidence of meconium stained amniotic fluid and perinatal morbidity and mortality.

Incidence of fetal distress in meconium stained amniotic fluid of our study is similar to those reported by Bhide (1993) 32.30% and Narang et al (1993) 31.80%.

References

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Table V I
Relation of intrapartum complication with MSAF

	Total n=1600	Class I n=1450	Class II n=150
Fetal distress	206 (12.8%)	139 (67.47%)	67 (32.53%)
Fetal distress with obstructed labour	20 (1.25%)	13 (65.0%)	7 (35.0%)
Fetal distress with failed progress of labour	153 (9.56%)	120 (78.43%)	33 (21.57%)
Prolonged rupture of membrane >24hrs.	60 (3.75%)	43 (71.66%)	17 (28.34%)

p< 0.05